AMERICAN

JANUARY · 19

Cinematographer

THE MAGAZINE OF MOTION PICTURE TECHNIQUES

This Issue ...

• Photographing Re-production
• New Method of Insert Cinematography
• Techniques of Color Photography and Printing

25c

FOREIGN

Production Chief Jim Rose (left) and George J Stoetzel, A S C Director of Photography, go over details of shooting schedule Mr Stoetzel, with over 27 years' experience in photography here and in Europe, says, "I've used all types of film and feel Du Pont is far superior"

Rex Marshall prepares to give filmed TV commercial Du Pont 'Superior" 2 with delicate tonal register and wide latitude will present the sponsor's product at its best

Discussing technical aspects of Du Pont Motion Picture Film are Jim Rose Joe Dougherty Du Pont Technical Representative George Stoetzel and Assistant Cameraman George Kamsler

"For TV film with that live, 3-dimensional look we use Du Pont 'Superior' 2!"

says **JIM ROSE,** *Production Chief, Vidicam Pictures Corporation, New York City*

"Thousands of dollars are involved in making a one-minute TV commercial, and we have to be sure the motion picture film we use will do the best job That's why Du Pont 'Superior' 2 is our choice for all black and white footage here at Vidicam," says Production Chief Jim Rose.

"After viewing some rush jobs we completed recently, I was convinced that 'Superior' 2 provides the finest quality, depth and roundness I have ever seen in television reproduction!

"Our work is mainly TV commercials, although we shoot sales and industrial films," continues Mr Rose "We do a great deal of appliance photography, in which most items are dead white Flesh tones of a model would go dark if the film didn't register middle tones accurately — another instance where Du Pont 'Superior' 2 turns out an exceptional job"

George Stoetzel, A.S.C , veteran Director of Photography, adds, "I know I can always count on 'Superior' 2 to capture those vital middle tones that I need in every commercial" Mr Stoetzel continues, "'Superior' 2 provides excellent gradation together with good speed. This lets us use a variety of lighting arrangements without danger of overexposure"

Take advantage of the many fine qualities of Du Pont Type 926 "Superior" 2 Motion Picture Film in your own work! It's an all-purpose film for both exterior and interior shooting, combining good speed, wide latitude and fine grain

FOR MORE INFORMATION, write or call the nearest Du Pont District Office (listed below) or the Du Pont Company, Photo Products Department, Wilmington 98, Delaware In Canada, Du Pont Company of Canada Limited, Toronto

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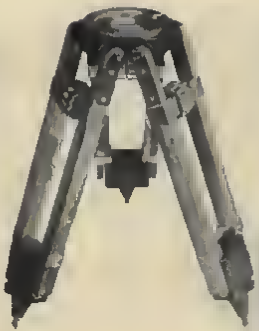

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Has substantial shoe and spur.
Measures from floor to flange 25" extended—17" collapsed.

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AMERICAN

Cinematographer

THE MAGAZINE OF MOTION PICTURE PHOTOGRAPHY
PUBLICATION OF THE AMERICAN SOCIETY OF CINEMATOGRAPHERS

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In This Issue

ARTICLES

PHOTOGRAPHING PRE-PRODUCTION TESTS—*By Joseph Ruttenberg, A.S.C.* 24
CURRENT TECHNIQUES OF 35MM COLOR FILM PHOTOGRAPHY AND PRINTING 26
A NEW METHOD OF INSERT CINEMATOGRAPHY—*By John Arnold, A.S.C.* 28
RESOURCEFULNESS AND INGENUITY VITAL AIDS TO 16MM CAMERAMEN —*By Charles L. Anderson* 30
FILMING THE JET CARRIER CLIMAX FOR "CINERAMA HOLIDAY" —*By Harry Squire, A.S.C.* 32
FILMING THE SKI BALLET FOR "CINERAMA HOLIDAY" —*By Joseph Brun, A.S.C. and Gayne Rescher* 33
PREPARING THE SCRIPT—*By Charles Loring* 34

AMATEUR CINEMATOGRAPHY

OUR GOALS WERE TOO AMBITIOUS FOR 8MM—*By Nadine Pizzo* 36
A SIMPLIFIED METHOD FOR RECORDING MAGNETIC SOUND ON 16MM FILM —*By Oscar Horovitz, F.A.C.L.* 38

FEATURES

WHAT'S NEW IN EQUIPMENT, ACCESSORIES, SERVICE 8
HOLLYWOOD BULLETIN BOARD 10
YOUR QUESTIONS ANSWERED BY JACKSON J. ROSE, *A.S.C.* 14
HOLLYWOOD STUDIO PRODUCTION 54

ON THE COVER

PRE-PRODUCTION TESTING — Grace Kelly poses for wardrobe and make-up tests for M-G-M's "The Swan," in which she portrays a beautiful Princess. Director of Photography Joseph Ruttenberg, A.S.C., is shown ganging the lighting for Miss Kelly's tests. Ruttenberg's article on "Photographing Pre-Production Tests" begins on page 24 of this issue.

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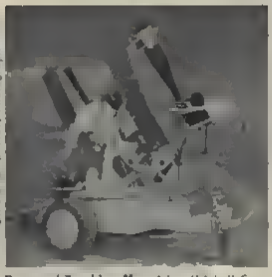
Multiple Mitchell Cameras on Mobile Turret at U S Naval Air Missile Test Center, Point Mugu Calif Seventeen 35mm and five 16mm Mitchells are used here

CAMERA BECOMES BASIC RESEARCH TOOL

Official U S Army Photograph

200 Mitchell Cameras, mostly high speed models, are in use here at White Sands Proving Ground, New Mexico



Official U S Navy Photograph

Powered Tracking Mount has Mitchell Cameras over 50 Mitchells are used at U S Naval Ordnance Test Station, Inyokern, Calif

Mitchell Telephoto Tracking Camera in use at Air Force Missile Test Center Cape Canaveral Florida

Official U S Air Force Photograph

One of 12 Mitchell cameras used to track missiles at Holloman Air Development Center Alamogordo New Mexico

Official U S Air Force Photograph

Vital Projects Now Heavy Users of Motion Picture Cameras With Flexible Performance Range

Accelerated project work has today put increased demands upon motion picture equipment Because of the need for a camera which can perform under a broad range of research and development requirements, the Mitchell Camera has today become the standard *basic* motion picture camera used in projects in this country and abroad

No other single camera can be used so flexibly, under such extreme filming conditions, and for such a broad range of cinematography as can a Mitchell Camera In one location alone, 200 Mitchell 35mm and 16mm cameras are now in use at White Sands Proving Ground

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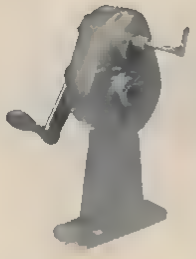
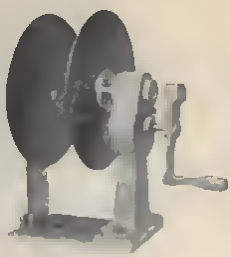
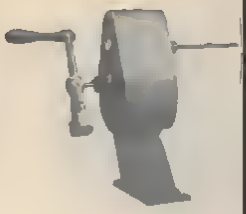


hand rewind



negative rewind set



differential rewind

power rewind

precision film editing equipment

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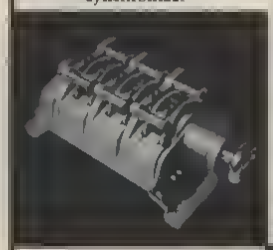
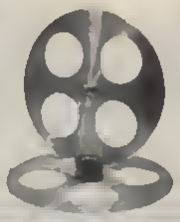
CALIFORNIA

synchronizer



split reels



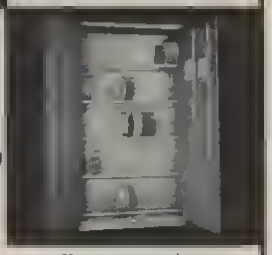
film racks

editing table

vault cans

swivel base

tightwind



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ANNOUNCES

AURICON CINE VOICE CONVERSION SERVICE

400 FOOT CONVERSION

Ideal for Newsreel Work

Modification	$325.00
Footage Counter	50.00
400 Magazine	150.00
Total Price	$525.00

1200 FOOT CONVERSION

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External take-up Motor	125.00
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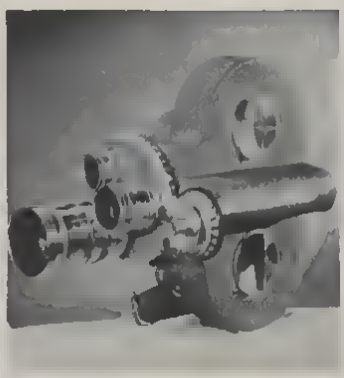
WHAT'S NEW

. . . in equipment, accessories, service

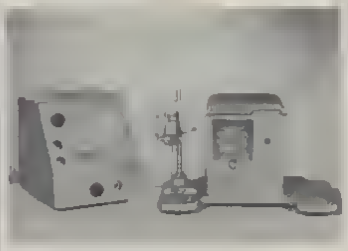


New Model-70 Camera

Greater operating convenience and improved styling are features of Bell & Howell Company's latest addition to its series of 16mm model 70 cameras.

Called the 70-DR, new camera features coupled view finder and lens turret. When rotating lens turret, each corresponding viewfinder objective is quickly and automatically positioned, thus eliminating the possibility of a user forgetting to rotate the finder when changing lenses.

Camera retains all features of its predecessor, the 70-DL, including 7 camera speeds, 22-ft. film run, three-lens turret, 100-ft. film capacity, forward-reverse hand crank, positive finder system, and lenses ranging from 10mm to 6 inches in focal length. Prices range from $361.50 to $508.05, depending upon lenses selected.



Dual Reader, Magnetic Model

The Camera Mart, Inc., announces a magnetic dual reader having a magnetic playback head that is adjustable to track position on 16mm, 17½mm and 35mm film, as well as 16mm and 35mm Magnastripe film. Unit may be used with any 16mm or 35mm silent film viewer to match picture with single or double system sound. With new model, it is possible to check a 35mm composite picture having optical sound against a second magnetic track. When films have both magnetic and optical tracks, the Dual Reader will check one against the other. Complete with amplifier and base, list price of magnetic model is $185.00. Combination optical-magnetic model is priced at $295.00.

Camera Gear Head

S.O.S. Cinema Supply Corp., 602 West 52nd St., New York, N.Y., introduces this month the Worral Geared Camera head for Mitchell and cameras of similar size and design. Head features a two-speed dual track, pan or hi-speed tilt, an adjustable tie-down screw for balance, and over-size handwheel controls. Pan and tilt gears may be disengaged so head "floats" friction free on balls or rollers. Unit fits any tripod, dolly, boom or crane, weighs approximately 80 pounds, and is priced at $1350.00.

Fotofade Now in Tubes

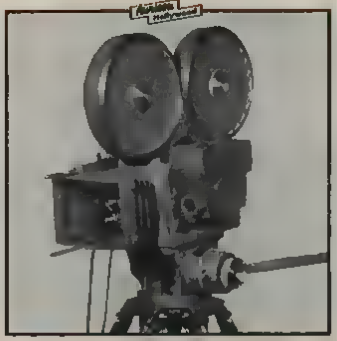
The Kalart Company announces that Craig Fotofade, the chemical dye used for making fades on film after photography, is now available in handy tubes. Fades are made by dipping black-and-white or color film frame by frame into solution prepared from Fotofade; professional-looking fades are simply and quickly achieved.

One tube of Fotofade will make 8

(Continued on Page 18)

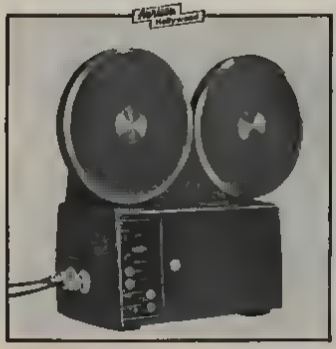
AURICON 16mm Sound-On-Film for Professional Results!

CINE VOICE 16 mm Optical Sound-On-Film Camera
★ 100 ft film capacity for 2¾ minutes of recording, 6-Volt DC Convertor or 115 Volt AC operation. ★ $695.00 (and up).



"AURICON PRO-600" 16mm Optical Sound On Film Camera.
★ 600 ft. film capacity for 16½ minutes of recording. ★ $1497.00 (and up) with 30 day money-back guarantee.

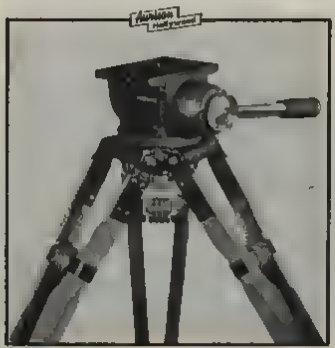
SUPER 1200 16 mm Optical Sound On Film Camera
★ 1200 ft. film capacity for 33 minutes of recording. ★ $4652.15 (and up) complete for "High-Fidelity" Talking Pictures.



SOUND RECORDER — Model RM 30...1200 foot film capacity, synchronous motor for "double-system" 16mm Optical Sound-On-Film operation.
★ $3359.00 (and up)

PORTABLE POWER SUPPLY UNIT — Model PS 21 Silent in operation, furnishes 115 Volt AC power to drive "Single System" or "Double System" Auricon Equipment from 12 Volt Storage Battery, for remote "location" filming ★ $269.50

DUAL PRONG TURNTABLE — Model DPT-10 Takes up to 16 inch discs with individual Volume Controls for re recording music and sound effects to 16 mm Sound-On-Film ★ $161.15



TRIPOD — Models FT-10 and FT-10S12
Pan-Tilt Head Professional Tripod for velvet smooth action. Perfectly counter-balanced to prevent Camera "dumping" ★ $325.00 (and up).

Strictly for Profit

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If it's profit you're after in the production of 16 mm Sound On Film Talking Pictures, Auricon Cameras provide ideal working tools for shooting profitable Television Newsreels, film commercials, inserts, and local candid-camera programming. Now you can get Lip-Synchronized Sound WITH your picture at NO additional film cost with Auricon 16 mm "Optical" Sound-On-Film Cameras. Precision designed and built to "take it." Strictly for Profit — Choose Auricon!

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MANUFACTURERS OF SOUND-ON FILM RECORDING EQUIPMENT SINCE 1931

Hollywood
Bulletin Board

PAST PRESIDENTS of American Society of Cinematographers were presented commemorative plaques at the December meeting of the Society. Standing from left to right are: Leon Shamroy, Ray Rennahan, Victor Milner, Charles Clarke, and Hal Mohr. Seated: Dan B. Clark, John Boyle, A.S.C. president Arthur Miller, Arthur Edeson and John Arnold.

COMMEMORATIVE plaques are adorned with miniature gavel, replica of member's Gold Card and plate bearing inscription of identity of past president.

GEORGE BURNS proudly displays Award of Merit presented McCadden Productions by the A.S.C. for excellence of photography of the Carnation commercials. At left is Phil Tannura who films "Burns and Allen" show. Arthur Miller (right) made presentation.

The American Society of Cinematographers last month presented McCadden Productions with its award of Merit for "outstanding photographic quality and excellence of star endorsement" in its Carnation Milk commercials for the "Burns and Allen Show." Arthur Miller, president of the A.S.C., presented the award to George Burns and Phil Tannura, the show's director of photography, on the Burns & Allen set at General Service Studio in Hollywood.

"Commercials only sell when they are believable and honest, and have the true quality of being part of the program itself," Arthur Miller pointed out in making the presentation.

▪ ▪ ▪

Sam Leavitt, A.S.C., has been signed by Naciema Productions to direct the photography of "Count The Dead." Production rolls at California Studio January 9th.

▪ ▪ ▪

J. Burgi Contner, A.S.C., director of photography for Guild Films, New York City, is currently shooting a series of 39 "The Goldbergs" half-hour TV shows. Alternately, he photographs the "I Spy" series of half-hour mystery TV dramas starring Raymond Massey.

▪ ▪ ▪

Boris Kaufman, A.S.C., last year's "Oscar" winner for best B&W photography ("Waterfront") is currently on location in Mississippi, directing the photography of "Baby Doll." Tennessee Williams story being directed by Elia Kazan.

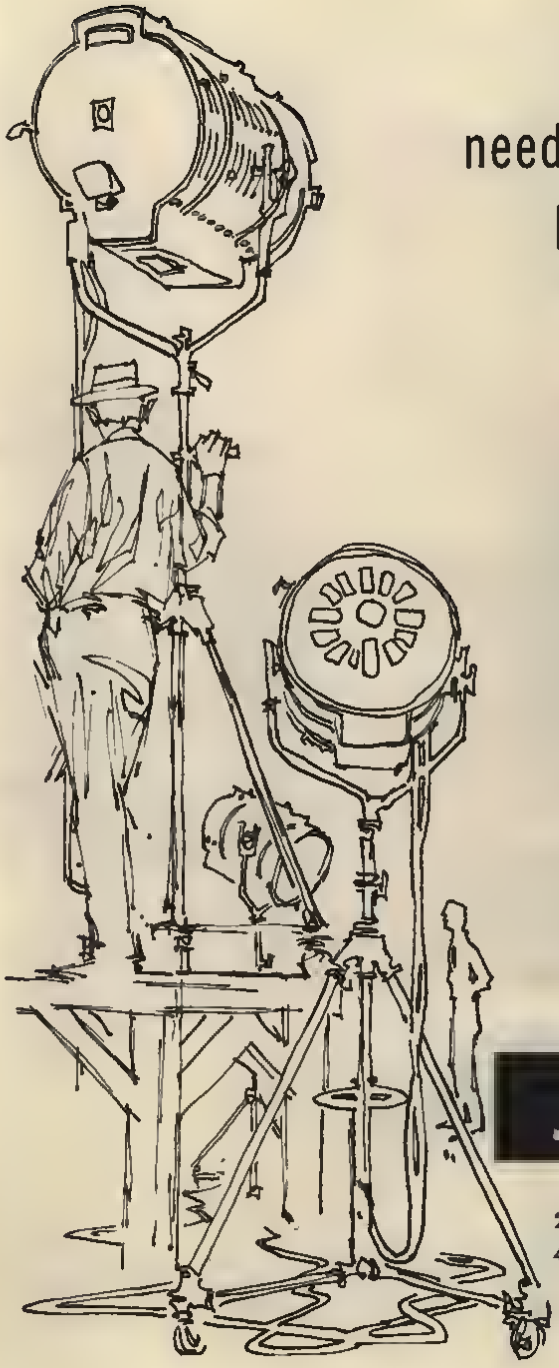
▪ ▪ ▪

Ray Foster, A.S.C., is shooting a new TV film series with Stuart Hamblin titled "Birth of a Song" at Goldwyn Studios in Hollywood.

▪ ▪ ▪

Charles Rosher, A.S.C., wound up his

(Continued on Page 12)



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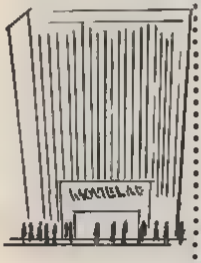

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Our 25th
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BULLETIN BOARD

(Continued from Page 10)

globetrotting last month and together with Mrs Rosher returned to his estate in Jamaica. While in South Africa, the Roshers were guests of several of the amateur cine clubs and participated in judging their film contests. Rosher is slated to visit Hollywood next month

• • •

Wilton R. Holm, a member of Du Pont's photographic products research department and an Associate Member of the A.S.C., last month was made secretary of the Society of Motion Picture and Television Engineers. He will serve out unexpired term of former secretary Edward S. Seeley of Altec Lansing, Hollywood. Holm, whose hobby once was writing screenplays, has written a number of technical articles for *American Cinematographer*

• • •

Lionel Lindon, A.S.C., is directing the photography of Michael Todd's "Around

FAMOUS bug-eye lenses of the Todd-AO cameras stand ready to catch anything and everything in bullfight arena in Spain for Michael Todd's "Around The World in 80 Days," being photographed by Lionel Lindon, A.S.C.

the World in 80 Days" in Todd-AO. Picture features David Niven, Cantinflas, Shirley MacLaine and Robert Newton, and is the second motion picture to be filmed in the Todd-AO process—the first picture being "Oklahoma." Two Todd-AO cameras are being used in filming all location shots.

• • •

National Board of Review of Motion Pictures, Inc., which has functioned for a number of years as a film guide post in New York, recently published its selection of the year's "best films, best performances," etc., and also bestowed special commendation on "Strategic Air Command" for aerial photography—which incidentally, was done by Tom Tutwiler, A.S.C.

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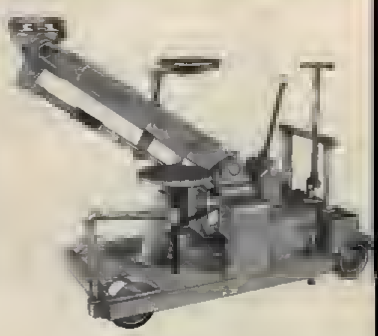
For motion picture and TV cameras. Sturdy cast aluminum. For standard or baby tripods. Additional baby tripod point holders to control spread of tripod legs. Adjustable spring seat. Extra wide rubber wheels. Bronze tie down clamps and other features.

For studio or location. Folds into one compact unit. Can be used with professional or semi-professional tripods.

'HYDROLLY'

TV OR CAMERA DOLLY

The advanced dolly for instant moveability — streamlined, lightweight, exceptionally sturdy. Nothing to get out of order. Many new advantages for easy operation. Hydraulic lift type for fast upward and downward motion of TV and motion picture cameras.



Swivel seat. Adjustable leveling head. Seat for assistant. In-line wheels for track use. Steering wheel, rigid floor locks. Hand pump or combination hand and motor pump. Easily transported in a station wagon. Fits through a 28" door.

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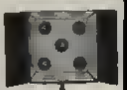
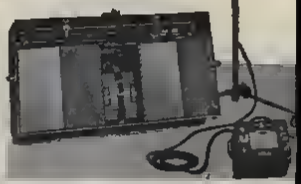


"A STUDIO IN A SUITCASE"



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For Studio or on Location. Lightweight — collapsible — for TV and motion picture production. Sturdy construction. Boom telescopes 7 to 17 ft. Rear handle for directional mike control. A remote control permits 360° rotation of the microphone. Operator can push the boom and operate microphone swivel simultaneously. Extension rods make it simple to operate microphone rotation from floor. Microphone cable hangs outside of boom, preventing cable from tangling with the rotation mechanism. Ball bearing casters, rigid foot locks, pneumatic drop check for lowering the boom, etc.

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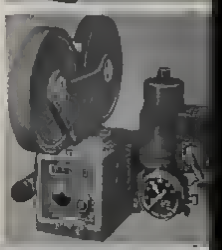
for Cine Special or Maurer Cameras



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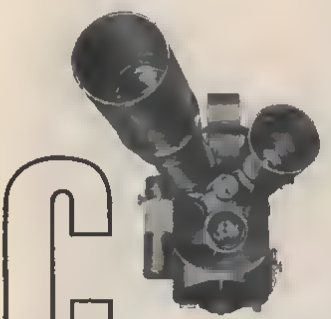

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YOUR QUESTIONS

ANSWERED BY JACKSON J. ROSE, A.S.C.

QUESTIONS of general interest will be answered in this column. We regret that demands on the editor's time will not permit personal replies.—*Ed.*

Q Recently I photographed a number of scenes in a factory, showing machines in operation. The resultant footage was disappointing. Because the machinery was painted dark grey it failed to show up well, and the bright metal trim produced disturbing glare, bouncing light back toward the camera lens. What can I do to improve the photography of such a setting"—J.H., Ill.

This is the type of situation that is invariably met by all cameramen and the solution comes with experience—by trial and error. You could have the machinery painted a lighter color. then place lights behind the various machinery units to create planes of separation The bright metal should be dulled with a spray solution now on the market for this purpose Or lacking this, simply dab a wad of putty on the bright surface. With key lighting of around 200 and using Tri-X film, a stop of f/5.6 should get acceptable results.

Q In photographing store window displays recently with Commercial Kodachrome, I find I picked up my own image reflection which did not seem apparent when I was shooting. How can this be avoided"—A.G., Colo.

Use of a Pola Screen before your camera lens should remedy the trouble Be sure to follow directions carefully and open up your lens an extra two stops beyond what your meter calls for.

Q I have a commitment to make a 16mm documentary film in color that is to be screened in large auditoriums and theatres. I will use two Bolex H-16 cameras with the following lenses: 15mm f/2.7, 25mm f/1.9 and a 63mm telephoto f/2.7. All are coated Eastman lenses, have produced sharp pictures for small home movie screens. I'm wondering if this equipment can produce pictures sharp enough for big screen projection.—R.R., Mich.

Assuming that you are an experienced photographer and know how to get maximum results with the equipment described, there should be no reason why your pictures can't be screened in theatres and auditoriums All lecture films exhibited by Burton Holmes in theatres and auditoriums are 16mm and are projected with standard 16mm projectors. Projecting the *original* instead of a dupe, of course, will insure the maximum sharpness and clarity.

Q We have been having quite a problem with stroboscopic effects in animation and live action photography. On animation work, when we pull the background through in front of the camera—east or west—or any subject in the foreground, we get this stroboscopic effect.

Recently, when filming live action—a revolving turntable with merchandise on it—the stroboscopic effect was so bad we had to discard the shot. The turntable rotated very slowly and the camera was located about three feet from front edge of turntable, and elevated about 1½ feet —looking down on the turntable holding a display of candy bars.—J.E.W., Tenn.

Your trouble can be caused by a number of things, but mostly it would seem that your problem is too many verticals Too many verticals in animation will create a pronounced stroboscopic effect.

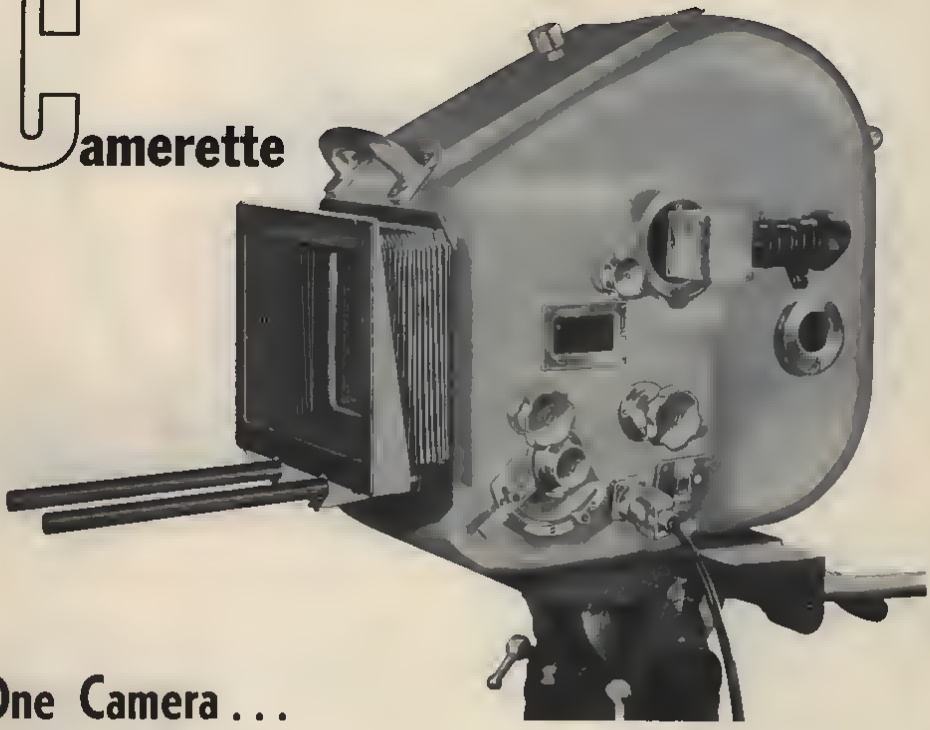
The rate of panning movement is another cause. Even when you think you are panning slowly, strobe effects will result; so the remedy is to pan still slower. In the case of the turntable and candy bar setup, if you panned the camera in the opposite direction from that of the turntable rotation, you virtually doubled the speed of your panning action.

Sometimes the degree of shutter opening used will cause strobe effect. This can only be corrected by trial and error. So make your shots in several ways, altering panning speed, reducing the verticals, and you're bound to get one or more acceptable takes

Correction

The answer to question of "P.M., Hawaii." last month, should have read "at . . 24 f.p.s. it is 1/46th of a second."—ED.

Camerette



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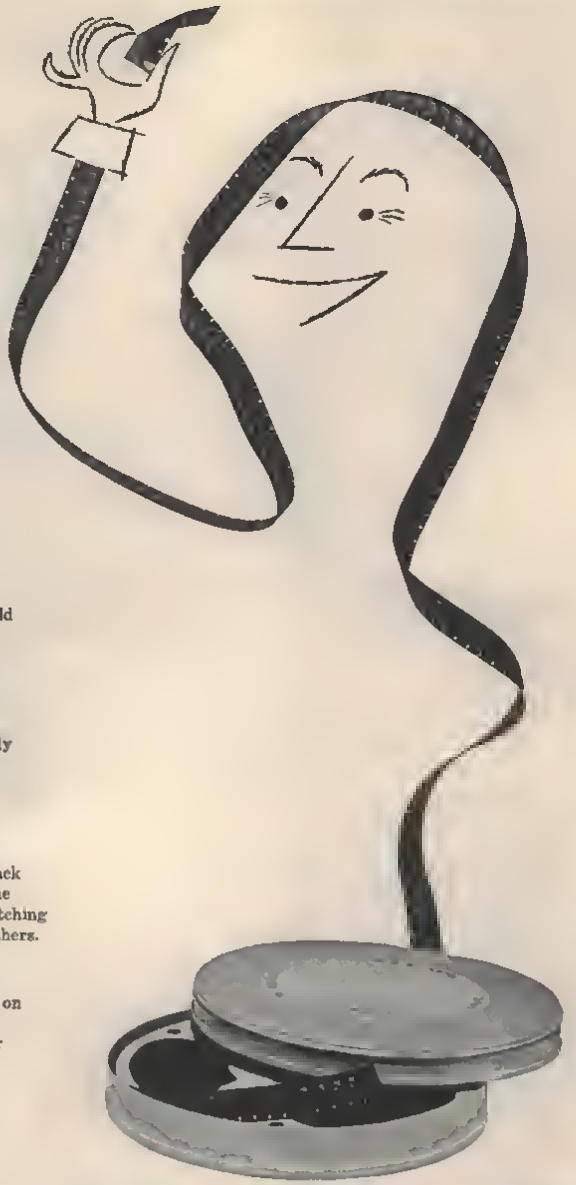

Talk was that other film sizee than 16mm could do better jobs in the industrial, educational and commercial fielde.

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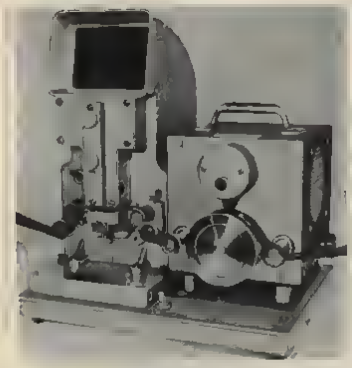

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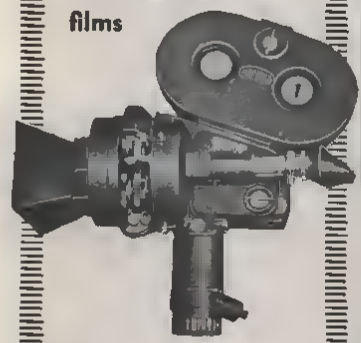
New 35 mm Model 2A
With 180° Shutter

A TRULY GREAT CAMERA
for TV, Newsreel and commercial films



For tough and trying assignments, ARRIFLEX 35 is in a class by itself. Reflex focusing through photographing lens while camera is operating—this is just one outstanding ARRIFLEX feature.

Equipped with bright, right-side-up image finder, 6½ x magnification. Solves all parallax problems. 3 lens turret. Variable speed motor built into handle operates from lightweight battery. Tachometer registering from 0 to 50 frames per second. Compact, lightweight for either tripod or hand-held filming. Takes 200' or 400' magazine. Write for free folder.

Blimp now available.
16mm ARRIFLEX also available.

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(Continued from Page 8)

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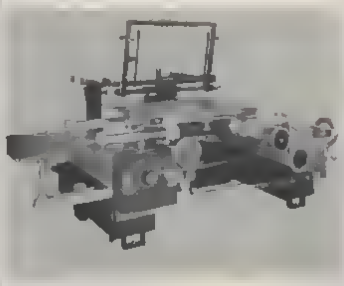


Compound Table

J. G. Saltzman, Inc., 480 Lexington Ave., New York 17, N.Y., announce availability of a new Caesar Compound Table for animation and special effects photography. Improved design enables operator to get close to his work without undue effort. All movements are calibrated in .010". The table can be either hand or electrically operated, and has a counterbalanced and interchangeable platen. Data sheet, prices, etc., may be had by writing the company.

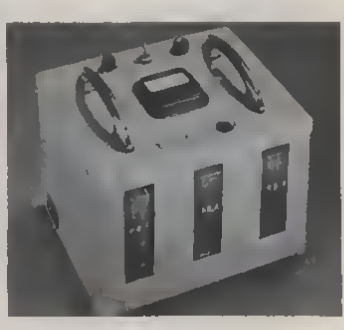
Collapsible Dolly

Cinekad Engineering Co., 500 West 52nd St., New York 19, N.Y., announces a new collapsible TV dolly designed to provide extra convenience when used in studio or on location. Special features include unique caster locking system which permits setting two or all three of the 5-inch heavy-duty rubber-tired wheels in parallel position for straight-line dolly shots; screw-clamps for securing tripod leg tips to dolly; and ability to fold into compact, easy-to-carry unit 28" in length. Net weight is only 18 lbs.

For price, write the manufacturer, mentioning *American Cinematographer*.

Craig Cement in Larger Bottles

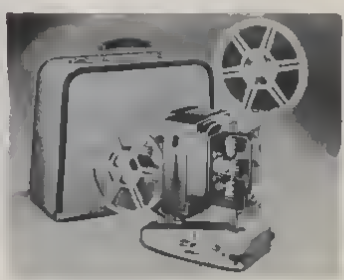
The Kalart Company announces that Craig Formula-7 Film Cement is now available in 8 and 16 ounce bottles, in addition to the original 1-oz. bottles. Larger bottles are designed for use by cine labs, studio cutting rooms and TV film rooms. Price of 8 oz. size is $2.45. 16-oz. size, $3.50.



Portable Power Supply

Filmtronics, Inc., 96 Hunting St., New London, Conn., announces a new portable power supply for use with the Auricon Super 1200, Arriflex 35mm, as well as other models of these two cameras. It is also recommended for powering motor-driven Bolex, Filmo, Cine-Special, Wall and Maurer cameras.

A feature is the visible non-spillable battery cells which have red-ball indicators to show condition of charge or discharge. Unit will hold charge for 120 days. Power output is 110-volts, 75 watts intermittently, 60 watts continuously for 1½ hours. DC current output, 6 volts. List price is $169.50.



Bolex 8mm Projector

Paillard Products, Inc., New York, announces a new 8mm projector — the Bolex M 8 featuring the exclusive "Filmguard" Lamp is 500 watts; lens is f/1.5. Other features include direct motor drive on takeup. Price is $169.50, including Deluxe carrying case.

May cost you less to own

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ARRIFLEX 35

MODEL IIA

with soundproof blimp and synchronous motor . . .

For little more than the usual rental charges for equipment, you can own a complete Arriflex 35 Model IIA sound outfit, including the variable speed motor, Synchronous Motor and Soundproof Blimp. As a result, more and more studios and cameramen are recognizing this fact and are buying Arriflex.

The Arriflex 35 Model IIA offers many advantages over other 35mm cine cameras. For example, without the Blimp and with battery-operated variable-speed motor, the Arriflex is an unusually light and easy camera to handle — ideal for location shots under the most difficult conditions — even for handheld filming. With the Soundproof Blimp and Synchronous Motor, it becomes the perfect camera for lip-synched sound — both in the studio and out.

The Arriflex 35 IIA features a 180° Mirror Reflex Shutter for through-the-lens viewing and follow focus. A new type of intermittent mechanism with registration pin action assure absolutely rock-steady pictures in perfect register.

Many other improvements have made the Model IIA the most desirable camera in the field. In fact, every important feature you would expect in a camera designed for first rate filming has been incorporated in the Arriflex 35 Model IIA.

Write for complete information to:

ARRIFLEX 35 Model IIA with SYNCHRONOUS MOTOR UNIT

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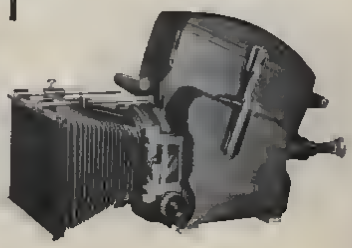
ARRIFLEX 35 Model IIA in SOUND-PROOF BLIMP

Blimp housing is cast magnesium alloy, finished crackle black. Accommodates Camera, Synchronous Motor Unit and 400-foot Magazine. Internal walls are lined with corduroy velvet over six alternate layers of foam plastic and lead. Doors are sealed with foam-rubber gaskets, and close by means of heavy, 'knee-action' clamp locks. Camera is cushion-mounted.



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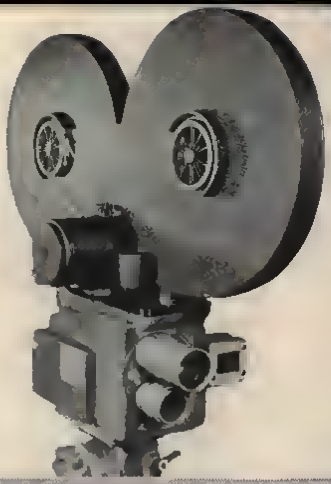

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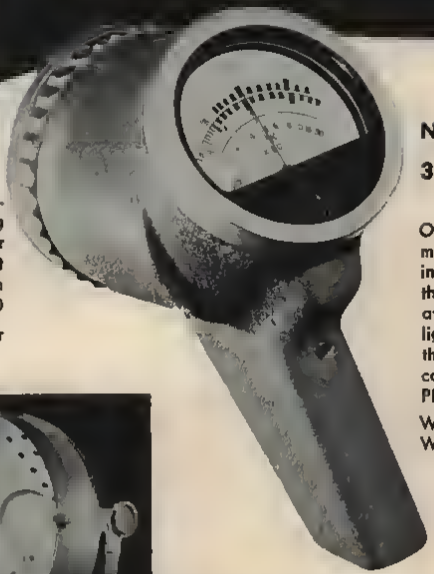

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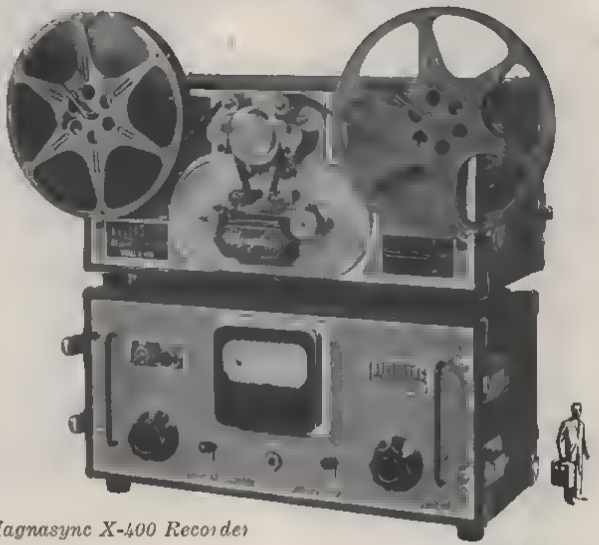

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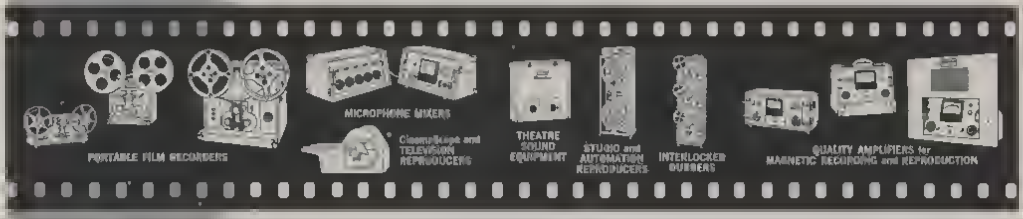

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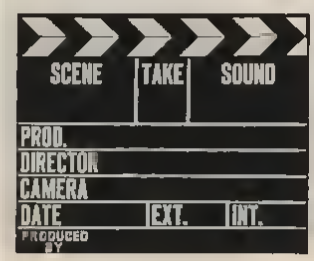

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SINCE THE ADVENT of color films, pre-production photographic tests are more important than ever. Here, Alec Guinness, portraying an eligible Crown Prince in M-G-M's "The Swan," gets final makeup touches as director Charles Vidor looks on. Meantime, director of photography Joseph Ruttenberg (seated, center) and his camera crew await the signal to start the camera.

Photographing Pre-production Tests

By JOSEPH RUTTENBERG, A.S.C.

ONE OF THE important pre-production steps that precedes the actual shooting of any feature film in a major studio is the photographic tests. At this period, which may precede the production's starting date anywhere from two weeks to six months, all of the stars and principal players are given photographic tests for makeup, costumes and hair styles.

A question that is frequently asked by those outside the realm of film production is "Why are new tests necessary for each picture, especially where the same players are cast in it? Wouldn't the tests made for the previous production suffice?"

The answer is that a complete new series of tests are required for each new production because, for one thing, the type of story is invariably different, calling for different characterizations which in turn call for a different type of makeup, hair dress and costuming. And where the leading lady has a new male star playing opposite her in the second production, it often becomes necessary to devise special makeup for each player so that both will photograph equally well under a single pattern of set lighting. Obviously, this can only be determined by photographic process—the pre production photographic tests.

At Metro-Goldwyn Mayer studio, one small sound stage is reserved for talent tests. However, quite often we will shoot tests on other stages where appropriate sets, not in use, are employed. Simplicity of background, of course, is an essential for all tests, because it is the player or players being tested that we are interested in. For this reason most makeup,

costume and hair styling tests are photographed with the subjects backdropped by a plain wall or flat The standing sets are usually employed for testing candidate players enacting bits for casting purposes.

After the tests have been developed and printed—and it should be emphasized that this film is given the most careful handling in processing to insure highest fidelity of color, etc.—they are screened before a group consisting of the producer, the director, the director of photography, head of the makeup department, the production makeup man, head hairdresser and assistant, and the wardrobe designer and assistant. This group analyzes the test shots, discusses suggestions that may be made for any changes, and such changes as may be decided upon are put into effect and a new series of test shots made The second tests are screened and evaluated as before, and sometimes it is necessary to make additional changes—and to photograph additional tests

One of the advantages these test sessions give to the director of photography is the opportunity to develop in advance of the picture's starting date a pattern of lighting most advantageous to the players. This in turn keys the lighting and photography later when the production gets under way on the sound stage. Here, while the makeup man, the hair dresser and the wardrobe personnel are giving the subject their personal attention, the director of photography is given opportunity to arrange and re-arrange his lights; to try several different lighting patterns—all the things he is unable to do except when under pressure of time, once the production gets under way.

Since the advent of color films, preproduction photographic tests are more important than ever. And they require more careful attention. We have found, for example, that some color films react differently to different colors. Colors that are appealing to the eye, often record differently on color film. And so, through our tests, the wardrobe department is able to determine what colors to use, and especially what fabrics, as often it is the fabric rather than the fabric color that proves a bugaboo.

NOT ALL pre-production tests are shot on the sound stage The camera tests for this "day-for-night" scene were first made on the studio back lot Result of tests was development of special reflective material for use in windows and vehicle headlamps to "burn through" heavily filtered photography Result is said to be the best "day-for-night" sequence ever filmed

One particular case that comes to mind was when we were shooting tests of Ann Blyth for "Kismet." One gown she wore for the tests did not record on color film as it looked to the eye. It was discarded and a new one of different color and fabric substituted. Miss Blyth was re-photographed wearing the new gown and the second test proved it to be entirely satisfactory.

Before we started shooting "Kismet," we also made photographic tests of one of the important sets. Here the floor had been given a particularly colorful job of paint. To the eye, it looked just right, but when the camera recorded it on color film, the result was flat and entirely lacking in the effect that the art department had in mind when it conceived it Needless to say, it was re-painted in color tones most complimentary to the color film being used, re-photographed, and found acceptable

It is generally assumed that natural plants, shrubs, etc., are highly compatible with color film But this is not always true, especially where these decorative effects are used indoors on the sound stage and photographed under artificial light

We encountered just such a problem on one of the "indoor exterior" sets for "Kismet"—photo of which appeared on the cover of the November issue of

(Continued on Page 45)

PREPARING GRACE KELLY for makeup test. At left makeup woman and hairdresser give final touch to Miss Kelly's hair prior to shooting one of the many pre-production tests for M-G-M's "The Swan." In next photo, director of photography Joseph Ruttenberg takes an exposure meter reading of the light One advantage of tests sessions is opportunity it affords cinematographer to develop the lighting pattern to be used in the production At right the makeup tests have been photographed and a discussion ensues between director Charles Vidor and head of makeup department regarding proposed makeup changes A full camera crew is always used when pre-production tests are photographed

Current Techniques Of 35mm Color Film Photography And Printing

WITH THE CURRENT evolution of motion pictures to various types of wide-screen techniques, great additional importance accrues to the techniques of color motion picture photography.

Within the past few years photographic techniques have been altered in two ways. New negative materials have been introduced and new aspect ratios for recording negative images have been developed.

The new negative materials are generally speaking, color negatives.

The aspect ratio (which means relation of picture width to height) had been settled for over 30 years at four to three, which means that for every four units *across* the picture there were three units in height.

Today this is all changed.

This article will deal with the most important photographic techniques now in use in motion pictures.

There are several color negative films manufactured by different companies throughout the United States and Europe. These negative films can be used in any ordinary black-and-white camera. They have three emulsion layers superimposed on a cellulose acetate base. These three emulsion layers are differently sensitive to different colors of light. This means that the photo-sensitive silver halide particles in the separate emulsions are exposed by different colors of light. Generally, color negative films have a filter layer between the top two emulsions. Where the color sensitivity is not complete, this filter aids in separating unwanted colors from a particular emulsion.

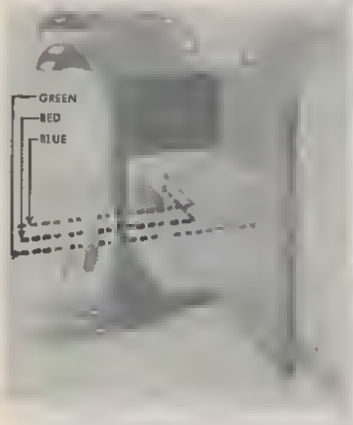


FIG 1—When color motion pictures are photographed by the three-strip method, a Technicolor camera is used in which three strips of 35mm B&W negative are exposed. Each records a specific color aspect of the scene. Green light coming from the scene is transmitted through the camera lens, as shown above, thence through a special light-dividing prism. It is recorded on a negative which is particularly sensitive to green light. The red and blue colors are directed in a similar manner to their respective negatives.

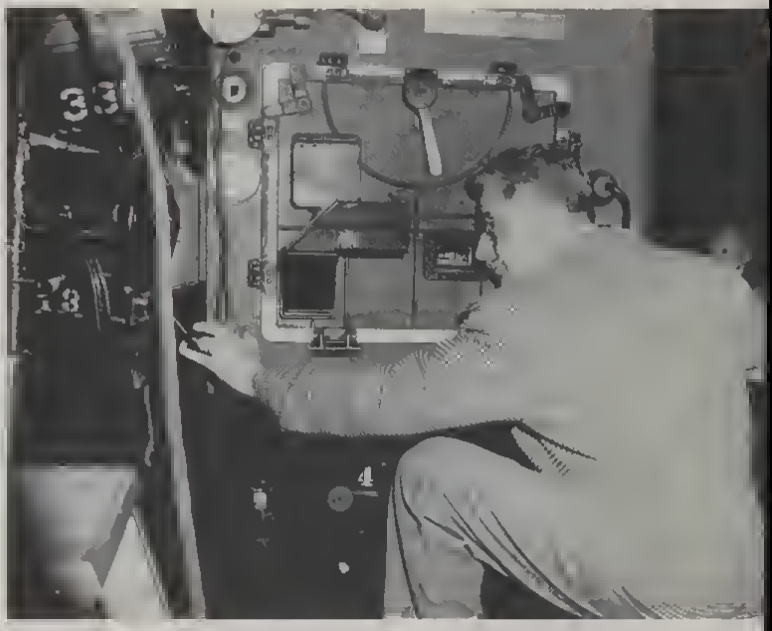


FIG 2—The Technicolor three-strip color camera, which, until advent of the present 35mm color negatives such as Eastman Color and Ansco Color, was used in photographing almost all color productions made in Hollywood. Technicolor has modified some of these cameras so that a single strip of color negative film may be used in the Vista-Vision manner, with the negative travelling horizontally past the gate two frames at a time. The resulting negative image area is then optically printed in reduced size.

In the United States the most widely used color negatives are Eastman and Ansco.

Both Eastman Color Negative and Ansco Color Negative have only one strip of film surfaced with three layers of emulsion, each being sensitive to a different primary color. Either film can be used in a conventional 35mm camera.

Similar to color negative, 16mm color positive film has three layers of emulsion, each sensitive to a different primary color — red, green and blue. The commercial film is low in contrast and differs from color negative in that a positive color image is obtained by reversal development rather than a negative. From it three 35mm separation negatives are made when dye transfer release prints are to be made for 35mm exhibition.

In Europe, there are three additional color negatives, Agacolor, Gevacolor and Ferraniacolor. These negatives are similar to those used in the United States in that three layers of emulsion are superimposed on a sigle film base.

The Technicolor laboratories, in both United States and England, manufacture

release prints from all of these color negative systems.

Technicolor has long recognized that an improvement in the definition or visibility of Technicolor dye transfer (imbibition) prints when projected in the theatre, especially on large screens, would be possible from a negative resulting from almost any system of photography that employed a larger than standard area of negative on which to record the picture information. There are a number of photographic procedures which might bring this about. One such system is Paramount's VistaVision which employs a single strip of 35mm color motion picture negative which, contrary to custom, moves horizontally through the VistaVision camera. The scenes are recorded on an area equal to two full frames of normal motion picture negative.

Working from such a double frame negative the Technicolor laboratory is manufacturing 35mm Technicolor dye transfer release prints of normal size and position, which may be combined with either photographic or multiple sound tracks. Such release prints can, of course, be projected on any screen including large screens, and in any aspect ratio from 1.33 to 1 or to any larger ratio desired. Since these new improved Technicolor dye transfer release prints are of normal size and position in every respect, no special projection lens in the theatre is necessary.

Technicolor has been working on the new system for more than two years, resulting in the introduction of laboratory procedures which are uniquely dependent upon steps in current Technicolor techniques. The new method is already in operation in moderate volume at the Hollywood plant.

When photographing with 35mm Eastman or Ansco color negative any standard 35mm camera may be used, including the "hand-held" or portable models. Specific "color" camers are not required. After the negative is developed, positive prints may be made in a manner similar to that for black-and-white film, or by the dye transfer method from the color negative, or from separation negatives, as will be explained later.

When color motion pictures are photographed by the three-strip method, a special camera is used. These cameras are manufactured by Technicolor and are furnished to the motion picture producer. They are available to him upon demand at his studio or on location.

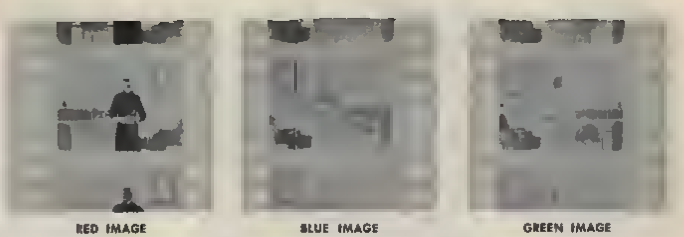
This camera is unique. It is the only one used commercially in which three strips of motion picture film are successfully exposed simultaneously to exactly the same scene. The strips of film in this camera are negative films and each records a specific color aspect of a given scene. As seen in Figure 1, green light coming from a scene is transmitted through the lens of the camera and thence through a special light-dividing prism. It is recorded on a negative film which is particularly sensitive to green light. The red and blue colors coming from the same scene pass through the same lens and enter the same special prism; but instead of being transmitted they are reflected to an aperture on the side of the camera. In this aperture two films are traveling. These films are placed one in front of the other, the front one records the blue light of the scene, while the back one records the red light.

When developed these negatives have silver images, and when held up to the light, appear the same as black-and-white negatives. These special cameras used in this taking process have traveled with location units to every continent of the globe. Cameras have been used in the air; under water; and even in the craters of volcanoes.

Technicolor has modified some of its three color cameras so that a single strip of 35mm color negative film may be used in the VistaVision manner. In these modified cameras the film runs past the camera aperture horizontally and an area corresponding to eight perforations (or two normal frame areas) is exposed. The negative image area is then optically printed in reduced size.

Successful printing of 35mm color motion picture film requires experience and laboratory skill. Faulty prints wipe out accurate color values achieved in photography and production.

Color printing procedures begin with white light. Optically speaking, white light consists of three primary colors — blue, green and red. This is one way of saying that when proper amounts of blue, green and red light are subtracted from white light, any color visible to the human eye will be produced.



RED IMAGE BLUE IMAGE GREEN IMAGE

FIG 3—The Technicolor three-color camera uses three strips of negative film and incorporates a prism in the optical system to divide the light, as shown in Fig. 1 (left). Two of the films with emulsion surfaces in contact are placed in the camera at a right angle to the lens axis. The front film receives the blue image and the rear film receives the red image. The third film, which is placed directly in back of the prism, receives the green image. The negatives after processing appear as shown above.

FIG 4—The successive frame photographic process, used in most animated cartoon photography, uses one strip of B&W negative in front of the camera lens. It is mounted on a wheel containing three filters—blue, green and red. This wheel rotates as each scene is photographed three times on successive frames through each of the three color filters. The negative therefore is three times as long as the finished print.

Negatives used in color motion picture photography separately record the red, blue and green aspects of the scene.

After development, negative images may be silver (black and white to the eye) or dye-colored. Only Technicolor laboratories prepare dye-transfer release prints from both kinds of image.

Developed negatives are evaluated to determine the printing light required. The negative is then run through a matrix printer, a device in which special matrix film is exposed to light coming through the negative. Matrix means what it does in other forms of printing—a relief image from which multiple copies are made.

(Continued on Page 58)

PHOTOGRAPHING Van Gogh paintings in CinemaScope by the Arnold Ektachrome Process for M-G-M's "Lust For Life" Developer of process is John Arnold, A.S.C., (center) Operating camera delaying device at left is technician Matt Kluznik Handling the transparency controls at right is operative cameraman Harnkness Smith Details of operation are described in photo below

A New Method Of Insert Cinematography

DUAL CONTROLS by which Ektachrome transparenc are moved in left or right, up or down, before camera during photography Effect is similar to and irit action with camera Sicle marks immediat above controls guide operator in moving the Ek chromes Figures indicate stop periods when Ektachro transparency remains stationary before the came

Developed especially for reproducing rore paintings in CinemoScope for M-G-M's "Lust for Life," Arnold Ektachrome Process promises increased fidelity in photography of grophic arts inserts.

By JOHN ARNOLD, A.S.C
Executive Director of Photography, Metro-Goldwyn Mayer Studio

WHEN METRO-GOLDWYN-MAYER first considered "Lust for Life," based on the life of the Dutch painter Vincent Van Gogh, the most challenging problem posed was how to reproduce on the screen in the CinemaScope format the many Van Gogh paintings essential to the story. Even more important was the problem of how we were to bring these paintings to the screen with all the rich-

EKTACHROME TRANSPARENCY being photographed is mounted in holder (1) which is movable North, South, East or West or diagonally by dual controls shown in photo at left. Simultaneously, camera can be dollied in or out by means of two-speed gear box and crank (2). Camera slides on metal base (3), and as it moves toward or away from subject, focus is changed automatically by sliding cam (4) geared to lens.

ness of texture and the fidelity of color for which Van Goghs are famous.

These were essentially photographic problems and were given to me for solution during the early pre-production conferences on the story. After many months of trial and error, of testing one method against another, there was evolved what the studio has come to term the "Arnold Ektachrome Process." It actually made the production of "Lust for Life" possible. Here's why:

As the story unfolds, Van Gogh, played by Kirk Douglas, is shown almost constantly in the process of turning out a canvas, a charcoal or an etching. The studio believed that interest in the story would be heightened considerably if (1) original Van Gogh paintings could be shown, and (2) reproduced on the screen with such vividness and fidelity as to arouse the admiration of art patrons and non-patrons alike; and (3) if the photography could be made flexible enough to permit moving in with the camera for closeups of certain details of a painting whenever desired.

And here is the package of problems which the achievement of all this might involve: the essential Van Gogh paintings are scattered all over the world—in private homes and in museums—which would make it necessary for a CinemaScope camera crew to spend well over two years just to photograph them, assuming that permission to photograph them with a motion picture crew could be obtained. It was quite obvious that this procedure would prove both impractical and too costly. Also, it was felt that many owners of Van Gogh paintings would strongly object to our bringing into their homes or museums the lighting and camera equipment that motion picture photography would require. And finally there would be the problem of obtaining the correct color values under the questionable lighting conditions which a photographic crew would be certain to encounter.

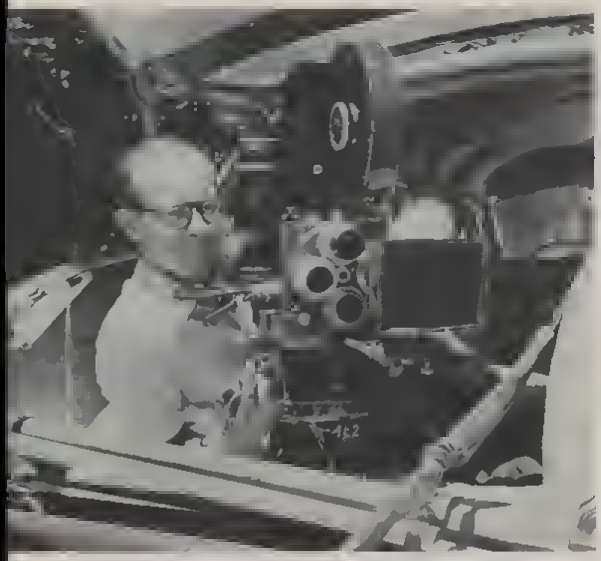
I proposed that instead of following the direct motion picture photography method, we make 8" by 10" Ektachrome transparencies of the paintings, then photograph these with the motion picture camera at the studio under fully controlled lighting conditions. All this method would require would be a still camera, a tripod, and a couple of 150-watt or 300-watt 3200° K lights—equipment easy to use in either home or museum.

(Continued on Page 42)

EXAMINING Ektachrome transparencies prior to photographing them with motion picture camera are John Arnold (right) and technician Matt Kiuznik. New process makes possible reproduction of paintings on screen with life-like fidelity in color and textures.

Resourcefulness And Ingenuity Vital Aids To 16mm Cameraman

By CHARLES L ANDERSON



A STATION WAGON makes a most versatile camera car for motion picture photography. Here Ralph Papin, cameraman for Gospel films Muskegon, Mich., has mounted his camera on the tail-gate for a series of traveling shots

WHILE THE DEMAND for films by industry, education, and advertising is greater than ever, competition among those photographing and producing such films is also keen, and every technique for increasing a film's worth or helping to keep the budget within reason is being employed by the most successful producers.

The excellent response of today's color films to every shade of color has tempted more than one cinematographer to experiment with filtering light sources for special effects. This technique has been familiar to Hollywood cameramen since the very first three-color Technicolor picture was produced, but industrial film producers have shied away from it. Color temperature meters, with their matching lens filters, lighting voltage controls, and more roll-to-roll emulsion consistency have for several years put 16mm color work in the "strictly under control" category and just recently a move has begun to take more advantage of that fact.

There's not much danger any more of a commercial producer or client thinking something went wrong because all the light on a scene isn't pure white. Because nearly every industrial picture closes with scenes of the sponsor's product in use or on display, the richness and sparkle of some color added to the scene gives a welcome change. In another type of picture, the cameraman of an industrial film on home permanents added an element of glamour to the close-ups with a light yellow filter on the back-light. Stainless steel and aluminum machinery parts have also received similar light treatment in well-made "nuts and bolts" films.

The technique may also be seen in quite a bit of still photography. A perusal of your record dealer's shelves will reveal many L.P. record albums illustrated with photos obviously lit with colored light. Especially note the pictures on mood music and operatic selection albums. Some are essentially lit with white light but have colored side- or back-lighting; others show an overall color tone. Both methods may be applied to lighting a shot for 16mm work, the choice depending—as it does in other matters—on how the shot will be used in the picture.

Other examples are seen occasionally in magazine ads. Note, however, where the technique is *not* used: food pictures, scenes where the color of fabrics is important, etc. When exact color reproduction is called for, white light is obligatory.

As to the practical method of controlling light quality, sheets of colored gelatine are usually placed over spotlights. Sometimes a set-up will duplicate natural off-color effects, as when the scene outside a window is illuminated much cooler than the set within. A film on baking bread contrasted scenes of pioneer days and modern times. In each

(Continued on Page 48)

ROY CRANDALL, photographer of nature subjects for Walt Disney, contrived the apparatus shown here for photographing small wild life in ultra closeups. Pressing foot-pedal on floor starts and stops the camera. Note also the special focusing attachments especially designed for the Cine Special.—Photo by Ray J. Manly for Western Ways.

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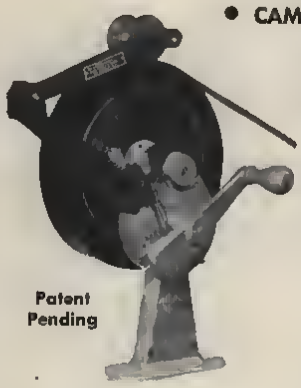

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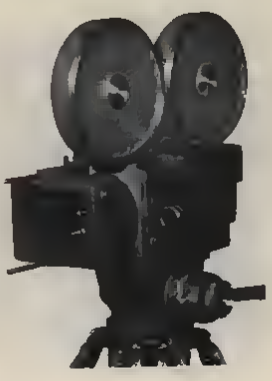

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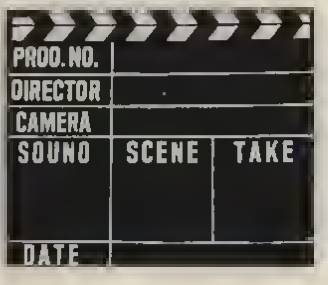

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PHOTOGRAPHING the landing of jet planes on the carrier USS Lake Champlain for the climactic finish of "Cinerama Holiday." Here the three-lensed camera may be seen mounted on hastily-built platform spiked to the deck edge

Filming The Jet Carrier Climax For "Cinerama Holiday"

By HARRY SQUIRE, A.S.C.

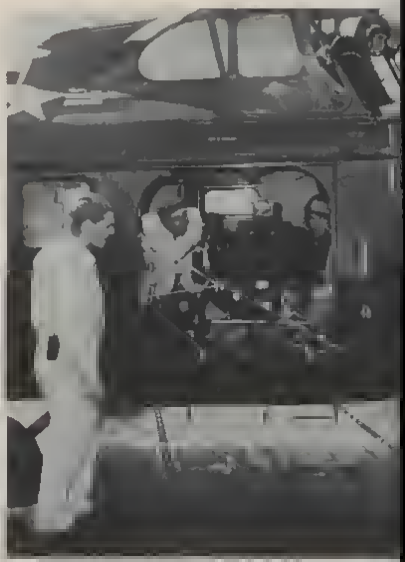
SOMEHOW CINERAMA has always taken very kindly to the air. Outside of the tests made by Fred Waller in the late 1930's with his eleven-lens 16mm Vitarama system, the first filming done with Cinerama was aerial combat.

That was during the war when Fred turned his ideas into the Gunnery Trainer that gave aviators a pretty realistic feeling of what it would be like to have Jap Zeros and Messerschmitts coming at them.

It wasn't until a couple of years after the war that we started photographing the first Cinerama feature film. Paul Mantz converted a B-25 for the aerial scenes that were planned, and the three-lensed Cinerama camera was mounted in the nose. Now there was room for only one man to handle the camera. I acted as operator, trying the make all the figuring and experimenting pay off.

Now Paul likes to say that you can't be an old *and* daring pilot. Paul is now 52 years old. But I swore never to fly with him again after we went through those mountain passes in Zion Canyon

(Continued on Page 52)



FOR PANORAMA shots, cameraman Harry Squire (2nd from left) mounted the Cinerama camera in the side door of a Navy rescue helicopter

THE CAMERA SLED on which was mounted the Cinerama camera for photographing the ski ballet for "Cinerama Holiday." Camera is suspended from above in a swinging mount attached to the metal frame. This enabled camera to sway and simulate skier's natural body swing.

THE CAMERA setup for shooting the bobsled run. Operative cameraman Gayne Rescher is behind the camera. Back of him are the storage batteries powering the camera's sturdy motor.

Filming The Ski Ballet For "Cinerama Holiday"

By JOSEPH BRUN, A S C, AND GAYNE RESCHER

LOUIS DE ROCHEMONT organized two distinct and separate crews after he was commissioned by Stanley Warner Corp. to make the second Cinerama production. We handled the camera in Europe, and, in addition, filmed the sequence in New Orleans, the "Birth of the Blues."

As a non-skier, Joe Brun was probably the one who did the most to sell the idea of a ski ballet in Switzerland. The magnificent Parsenn slopes near Davos were selected by Mr. de Rochemont and his director, Bob Bendick. As our adviser on the project, supplying know-how and most important of all, skiers, was Max Bertsch of the Davos Ski School.

Upon arriving in Switzerland, we first filmed certain sequences in St. Moritz, the "Holiday on Ice" show at the Suvretta House, and the bobsled ride. The cheese fondue ceremonies were photographed at "La Ferme," in an accurate reconstruction of the interior of a Swiss mountain farmhouse, which serves a sort of "nineteenth hole" for skiers.

(Continued on Page 53)

REHEARSING A SCENE in front of the White House in Washington, D C, for Warner Brothers' "The Court Martial of Billy Mitchell." Director of photography Sam Leavitt, A S C, standing behind the Mitchell camera at far left, credits the well-detailed script of the picture for eliminating a lot of "on the set" photographic problems —Photo by Mac Julian

Preparing The Script

The film script should be as carefully planned and prepared as a homebuilder's blueprint.

By CHARLES LORING

EVERY WORTHWHILE motion picture, no matter what its type or aim, is based upon the seed of an idea. After the idea has been selected and broadened out into a theme, a script is then constructed as a working plan for translating the idea into a motion picture.

The script is the film-maker's blueprint. It is a plan of action and dialogue, of camera angles and lighting; it should provide information by which every technician on the picture can plan the details of his particular contribution. Time was when Hollywood directors could stage a whole feature without having one word of the story down on paper; but that era has long since passed. Today every entertainment film is scripted in the very finest detail before a camera starts to turn. The technique is not exclusive with Hollywood however. Every motion picture be it documentary, commercial, training or home movie, should be shot from a carefully prepared script. Aside from the saving of time, effort and expense that results, a well-planned script will mean a better integrated film — one that "hangs together," that tells a tight, unified story without going off on tangents.

A great deal has been written on script writing. Many articles and books on the subject have stressed the screenplay *form* rather than going behind the scenes and dealing with the more or less abstract elements that go to make up a good script. It is these elements, therefore, that we shall attempt to analyze here, since, once they are mastered, the actual construction of the script is a relatively routine mechanical job. And we shall deal with those phases of script preparation that are common to all types of motion picture production.

Our first consideration is to satisfy our audience. No matter what the subject or the approach, or whether the film is to inform or entertain, it cannot really be successful unless it is accepted by the audience for which it is intended. Film audiences today are much more critical than they used to be. Consciously or subconsciously they have come to expect the motion picture to live up to certain standards of construction. When these standards are lacking the audience will reject the film—*even though they may not be able to tell specifically what is wrong with it.*

Therefore, it is important that a motion picture should put across a unified, dominant idea; it should tell a story and tell it completely. Too many films are fragmentary, disorganized, lacking in coherence. They nibble at the edges of an idea rather than stating it boldly and then following through to a definite conclusion.

No less important is the fact the motion picture is an action medium and it should be written and produced with the emphasis on action. Static scenes or sequences, too much dialogue or narration in place of visual action—these

(Continued on Page 50)

"WHEN THE SCRIPT spells out the photographic requirements of a scene or sequence in great detail it goes a long way toward enabling us to plan the photography in advance," says director of photography Robert Surtees, A S C, (seated hatless atop truck) whose two-camera crew is pictured here shooting a scene for M-G-M's "Tribute To A Bad Man."

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THE AUTHOR, Nadine Pizzo, who photographed much of "Fall of the House of Usher" in collaboration with her husband, Sal Pizzo.

We wanted a subject to film that would give us full scope for the dramatic use of illumination. We chose Poe's "Fall of the House of Usher."

SAL PIZZO essayed the role of Roderick Usher. He also directed, wrote the script in collaboration with Mrs. Pizzo, and did the narration. The production was filmed in 16mm Kodachrome.

Our Goals Were Too Ambitious For 8mm

By NADINE PIZZO

IN MY ARTICLE dealing with "The Drama of Color" in last month's issue, I pointed out how through experimentation, taste, and dramatic sensibility the visual vocabulary of color can be manipulated to create whole new worlds of color imagery and dramatic expressiveness in motion pictures.

Before proceeding further on this subject of drama of color, at which time I shall also describe how I utilized it in producing, in collaboration with my husband Sal, the 16mm color film "Fall of the House of Usher," I should like to describe how we chose this story for filming and how we got started in this fascinating hobby of making movies.

We are a husband-wife team, an arrangement not too uncommon in amateur circles where all the highly specialized departments of production must be handled by one or two people. We are fortunate in that our combined backgrounds enable us to function as a complete team. We both have theater experience. Sal's years of activity as an actor in local little theater have been invaluable in our motion picture work. (He created the role of George in the world premier production of John Steinbeck's "Of Mice and Men".) He handles the directing department and much of the acting. He portrayed Roderick Usher in our "House of Usher." He also functions as director of photography. When he is involved on the set, I act as cameraman. You can well imagine the problems involved in those sequences when he is appearing before the camera, simultaneously attempting to analyze his own performance, supervise the camera work and direct the other actors on the set. Happily, we each think and see in terms of the medium, both pictorially and dramatically. Even more important than this, we share the same point of view, the same artistic concepts. Therefore, we can work as one in that most difficult of partnerships—creative collaboration.

After years of yearning to explore the dramatic possibilities of the motion picture medium, my husband purchased his first camera, an 8mm, in 1951. There followed fifteen months of avid study and shooting. In August of 1952 we both felt ready to begin a serious production. We wanted a subject that would give us full scope for the dra-

(Continued on Page 46)

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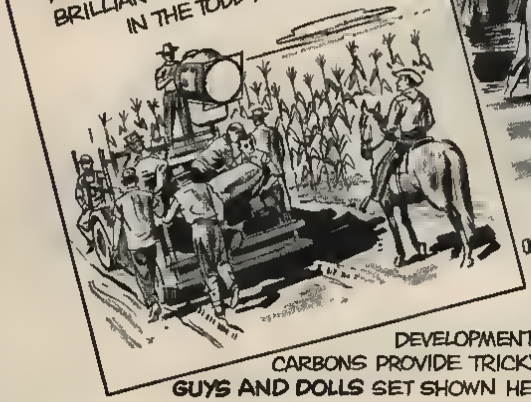

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A Simplified Method For Recording Magnetic Sound On 16mm Film

By OSCAR H HOROVITZ, F A C I

FIG 1—MICROPHONE mounted on neck yoke keeps it at uniform distance from speakers lips Demonstrated here by author, apparatus is insulated with rubber to prevent annoying clicks caused by bare metal striking shirt buttons, etc

THE ADVENT of magnetic recording on film opened up broad new vistas of film making for many 16mm movie amateurs The serious amateur had for years been working with sound as an adjunct to his films, usually in the form of disc recordings, or used music from standard records played on dual turn tables as the picture was being screened Now, thanks to the development of sound striping and the introduction by Bell & Howell, B.C.A., and others of magnetic-recording 16mm projectors, the serious amateur is for the first time able to give his productions a genuine professional finish.

Earlier, when using records and turn tables to provide sound for my films, my biggest problem was starting records playing at exact pre determined (and marked) spots Today, these problems happily are all behind me Magnetic sound on film is the real answer to the problem of providing synchronized sound for amateur films

Once I settled on magnetic sound I determined to develop a simple surefire, easy method of recording, and I think as one who has had considerable experience in adapting magnetic sound to 16mm films, what I have to offer here may be of genuine help to many other amateur movie makers considering switching from discs to magnetic recording.

The number one step, of course, in preparing to add sound to any film is the careful preparation of the script. Since practically any standard quarter-inch tape recorder will maintain constant speed for at least two or three minutes (and most of them maintain constant speed indefinitely), I record narration for my films in short sections of two to three minutes dura

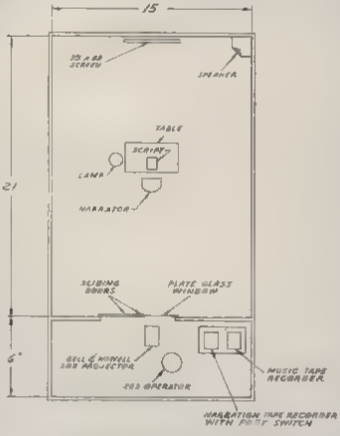

FIG 2—AUTHOR's recording room and theatre Projector, in separate soundproof enclosure, leaves narration room free of annoying sounds

tion. These are separated by musical interludes of not less than 10 seconds duration The short narration recordings I find maintain synchronization with my Bell & Howell "202" magnetic-projector, so that it is no problem later to re-record the narration directly on my soundstriped films and have it always in sync.

Because any recording error requires starting over again, I never record music back of voice narration except when some short narration occurs during a run of music.

Step number two in this system is the recording of narration on a tape recorder. I prefer this method to recording direct on the sound-striped film because if an error is made, it is a simple matter to erase and re-record, or to make a second "okay" recording. Moreover, the use of pre recorded narration on tape makes it possible to check it for accuracy by playback. After narration has been recorded and approved, the next step is re-recording it directly on the soundstriped film with my Bell & Howell "202" projector-recorder

For this I have an ideal set up—a playroom-theatre in my basement This has two sliding doors at one end One has a plate glass window through which I project my picture during recording sessions (See accompanying diagram.) In this way, I isolate the sound of the projector from the microphone, which is carried by the narrator sitting about 10 feet from the screen

The tape recorder carrying the narration is set up close to the projector, within easy reach of the operator who wears earphones plugged into the recorder. This enables him to follow the narrator as the script is being read and the picture is being projected and in the event the narrator misses a cue fumbles a sentence or fails to keep pace

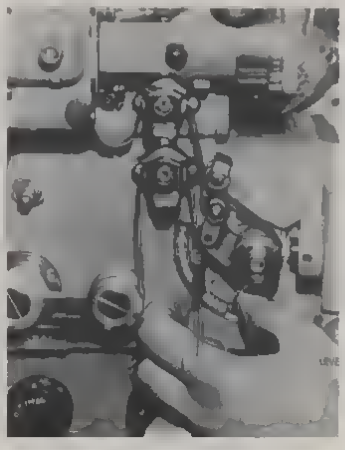

FIG 3—Controls of the Bell & Howell "202" magnetic-recording projector

with the picture, he can stop the recording and call for a repeat reading.

To avoid annoying variations in voice levels, which is often caused by the narrator moving toward or away from the microphone as he speaks. I have the mike mounted on a neck yolk, as shown in Fig 1. This keeps the microphone at a fixed distance from the narrator's lips, insuring uniform voice level at all times As may he seen in the photo, the mike base is covered with a layer of foam rubber and the metal yoke is covered with rubber tubing. This insulation eliminates annoying "clicks" that would othewise occur in the recordings due to the hare metal striking shirt buttons, etc.

For recording narration, almost any popular-priced tape recorder may be used, and it should be equipped with a foot switch. This also eliminates another source of "clicks" which occur when the recorder is stopped and started with the conventional switch on the operating panel.

Another innovation I have adopted is the practice of placing pieces of white leader tape at the beginning of each recorded section These are about fifteen inches in length and are used to make pencil notations of the first few words of the opening of the narration. as a guide in re-recording.

The third step in my system is recording music on tape. Here it is doubly important to avoid the "clicks" mentioned above when playing the recordings into the "202" projector. For safety I always record at least 5 seconds of extra music for runs up to 30 seconds, and 10 extra seconds for runs of 30 seconds or longer On the white leaders I indicate "Music No. 1," "Music No 2," etc., corresponding to similar notations on my script

When recording of all the necessary music is completed, the next step is re-recording all tape recordings directly on the soundstriped 16mm film, using my "202" projector. Here a second tape recorder for narration is brought into play, and this is operated hy foot switch.

The "202" takes about 3/4 second to get up to full speed. As the tape recorders attain full speed almost instantly, I set the tapes at a point on the leaders 3/4 second ahead of the sound on tape—this point being placed at the playback head of the tape recorder.

The 16mm film is so threaded in the "202" projector that it takes three seconds for the opening frame to appear on the screen. I start and stop the "202" by means of the clutch only, and stop and start the narrative tape recorder by means of the foot switch as it plays back into the recording projector The music tape recorder is started simultaneously with the "202". Just be-

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fore the narration begins, I start fading the music and release the foot switch on the narration recorder 3/4 second ahead of the point where the narration is to begin. The first section of the narration is recorded and then all machines are stopped. The next section of narration with its accompanying music is made ready for re-recording. But before this is begun, the previously recorded section is backed up in the "202" projector, then played back. The projector is stopped sharply (by clutch release) just as the last word of narration is heard. I then place the main volume control of the "202" at its lowest point (being careful not to shut it off completely), then switch the control lever from "Play" to "Record." I press the "Record" button, place the volume control back at normal level, then by means of the small hand-set knob on the front of the projector, I back the film up three or four frames. When the "202" is again started, the click produced by the "Record" switch will be automatically erased.

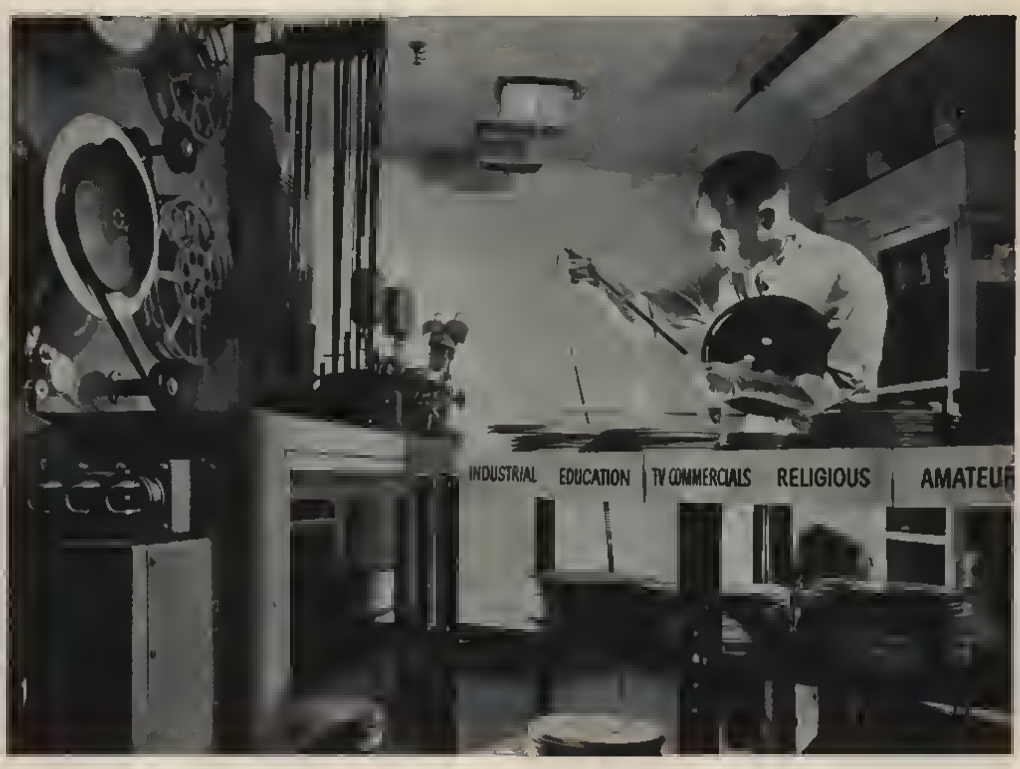
I start the "202" and the music tape recorder simultaneously, setting the volume control on the latter at a low point, then fade in the volume to its proper level. In the event I make an error in bringing in the succeeding musical number or botch up bringing in the next portion of the narration, I need merely go back to the last few words of the previous narration and start from that point.

At the end of the film—where the music must end exactly right—I use a stop watch and time the length of the film to the fadeout of "The End" title. I place "finale" music of comparable playing time on the recorder, always remembering, of course, to make allowance of 3/4 second to get the "202" up to speed, and also to fade-in the "finale" music.

In following the method outlined here, if the film is a lengthy one, I find it best to plan a fadeout and a fadein in the middle, with the narration ending at the beginning of the fadeout, then resuming again after the fadein is completed. The fades should be at least 40 frames in length. In this way, it is possible to cut the film into two parts for easier handling, then join it together again.

There are a number of advantages to using tape recorders as against direct recorder via the magnetic-recording projector. In the event film is damaged during projection at any time, the damaged section can be snipped out, and the sound for the remaining footage of that scene re-recorded without having to call back the narrator. The original narration stored on tape serves instead.

It is easier to maintain uniform levels in the recordings, especially where re-



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cording is done in sections, as outlined above. So often in direct recording through the "202" magnetic projector, the narrator may pause for a drink of water, and the following section of narration may be at a different level Where such recordings are on tape, it is possible to adjust the volume levels as re-recording takes place—indicating the correct volume levels on a cue sheet for guidance.

Once you acquire the necessary recording equipment, it is advisable to spend some time in making trial tests Tape can be erased and used over again, so there is no problem of cost there. And the same erasure-re-record factor holds true with sound striped film. So it is a simple matter to take any one of your old films, have it sound striped, then prepare and record narration and music for it. Competence will increase with each successive recording, especially as one becomes familiar with use of the equipment and the various controls.

INSERT CINEMATOGRAPHY

(Continued from Page 29)

We made our first test transparencies locally. Actor Edward G Robinson and film producer William Goetz, both art collectors owning rare and valuable Van Goghs, gave us permission to come into their homes to photograph the paintings The results of these first Ektachrome transparencies were sufficiently promising to send me to New York where, in the famous Wildenstein Galleries, I photographed a great many more Van Goghs The transparencies were processed in New York and then submitted to the galleries' color expert for evaluation He declared them perfect reproductions.

With these additional transparencies to work with, I returned to the studio and there began the next step—that of designing the necessary equipment for photographing the Ektachromes with a CinemaScope camera In the meantime, two still photographers were assigned to photograph the transparencies necessary for the production They were Ed Bagley, who covered New York and other eastern cities, and Dave Boulten from M-G-M's London Studio, who was assigned to photograph certain Van Gogh art in European cities Boulten was first brought to Hollywood where he was coached in the photography and lighting techniques which we had developed for making the Ektachromes The result of the combined efforts of these two men to date is a file of several hundred 8" by 10" Ektachromes which are valued at well over a quarter of a million dollars.

Each Van Gogh painting was photographed in two ways: first with an anamorphic lens combined with the camera lens, and then with the regular camera lens alone. The Ektachromes made with the anamorphic lens were photographed thus to enable us to compress the vast expanse of large rectangular pictures on the available area of an 8" by 10" negative. When such Ektachromes were photographed later with the motion picture camera, a regular lens replaced the CinemaScope lens, "unsqueezing" of the anamorphic image is then automatically taken care of in projection.

Incidentally, it should be mentioned here the importance of the special lighting technique which we developed for photographing the transparencies. It is different than would normally be used in photographing an actual painting with a motion picture camera. The paintings have to be given very careful lighting to enable the camera to capture the realistic details of the brush strokes, the thick paint, and texture of the canvas. Once we get all this on a transparency, we are in a position to transfer the picture to motion picture film with greater realism than any other method can afford.

In photographing Van Gogh etchings and charcoal drawings on Ektachrome film, new problems confronted us, especially where we wanted to reproduce the art in its original size for props and set dressing material. These works failed to register on the Ektachrome color film in all the gradations of greys and blacks that were in the originals. So a somewhat complicated process was developed for making the enlargements which involved a combination of photography, photostat, and silk screen process.

First we shot the black-and-white art with Ektachrome, then made a dupe negative which is used in the first step of the photostat process. The original Ektachrome was then printed by projection over this initial exposure. After the print was processed, the silk screen method was then employed to add the necessary highlights. With each step in this process carefully controlled, we were able to reproduce the art with all the fine gradations inherent in the originals.

The accompanying photos show the equipment which was erected in the test laboratory of the camera department of M-G-M studio, and by which Ektachrome transparencies are presently being photographed on motion picture film. It enables us to photograph the transparencies wholly or in part, in detailed closeups or in scanning or dollying movement of the camera. The camera is provided with but two movements —forward and backward—making it

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possible to dolly in and out on a painting, where desired. To scan a painting —that is, as it would be done with the camera moving laterally, or up and down—the painting itself is moved instead in the desired direction by the camera assistant operating a set of controls which are pictured on page 28.

The basic apparatus consists of a stationary metal table on which are mounted two tracks to take the cradle holding the Mitchell 35mm camera. Contact with the tracks is by friction. Rollers, wheels, and ball bearings were eliminated as it was found they induced a minute amount of vibration in the camera when it was moved. The forward and reverse travel of the camera on the table is by chain drive activated by hand crank and a two-speed gear box.

As the camera moves toward or away from the subject photographed, focus is changed automatically by a special shading cam arrangement coupled to the lens gears. Mounted on rear of camera is a scale plate and pointer which guides the operator in making lap-dissolves. Because it is essential to maintain absolute control over the fidelity of reproduction of the paintings, the lap-dissolves are done in the camera instead of in the laboratory, as is customary with other production footage.

One of the important developments was the designing of a special auxiliary or "closeup" lens, which is mounted in front of the CinemaScope lens on the camera. This enables us to photograph with infinite sharpness minute areas of the Ektachrome transparencies.

In photographing the Ektachromes with the motion picture camera, they are placed in a holder mounted on a vertical framework. By means of a dual control system similar to the tilt and pan controls of a conventional camera, the Ektachromes can be moved North, South, East or West or diagonally by the operative cameraman to permit the camera to scan them in detail. Above the controls is a slate on which marks are chalked as a guide for the operator handling the controls. Often during the filming of a painting calling for this lateral movement, the zoom or dolly movement of the camera will also be employed to give additional scope to the reproduction.

The Ektachromes are indirectly lighted from the rear by illumination from a huge incandescent lamp cast by a white surfaced reflector. During the photography, the cameraman keeps close check on the illumination for color temperature, as this is most important to obtaining fidelity of color in the painting reproductions. Exposure readings are taken by holding the meter close to the transparency.

So successful have been the results achieved to date with the "Ektachrome Process" that plans are presently underway to extend its use to future M-G-M productions. We have found that where printed matter or art work of any kind is to be reproduced in color on the screen, that this process enables us to reproduce it better and with greater fidelity to the original than any other method yet employed.

M-G-M's "Lust For Life" Shot on New Ansco Color Film

The new Metro-Goldwyn-Mayer CinemaScope production of Irving Stone's famous novel about the painter Vincent van Gogh, "Lust for Life," has an additional star on its roster, the new high speed, fine grain, Ansco Color Negative motion picture film which is being used for the first time and under the most exacting conditions possible.

Starring Kirk Douglas as Van Gogh, and Anthony Quinn as Paul Gauguin, the action sequences were photographed mostly in Europe—in Holland, Belgium and France, where the artist lived.

Filmed in the towns and countrysides where he actually lived and worked, "Lust for Life" is the story of Vincent Van Gogh and of the people in his life who both help and hinder his progress along his chosen path of creating paintings now treasured as the world's greatest.

The first use of this new material, which has since been further refined to its present high speed and even finer grain, took place in 1951, when MGM started production on "The Wild North," starring Stewart Granger, Cyd Charisse and Wendell Corey. This picture was released in early 1952 and not only received great critical acclaim but also reaped an Academy Award for Ansco in 1953. The Award was given to Ansco for Negative-Positive color process as a major contribution to cinematography.

An advantage to the industry is the fact that Ansco Color Negative film can be shot with the studio's own equipment, which is also used for black-and-white film production. Processing of the Ansco film can be handled on the studio's own processing equipment with only minor modifications. This means rather considerable savings in costs since the studio can do the whole job on a color production, including shooting, processing, duplicating and every step between, using its own technical and laboratory personnel.

PHOTOGRAPHING TESTS

(Continued from Page 25)

American Cinematographer. The setting was a beautiful storybook-type garden, lush with greenery of every sort It was essential that the full beauty of the setting register with the utmost fidelity. However, our pre-production tests proved quite disappointing. To remedy the situation, it became necessary for the set dresser to paint the leaves of many of the shrubs to enable them to register in the desired colors on film. Obviously, a number of separate "trial and error" tests were necessary before the right colors were found.

Pre-production testing often extends to location sites, where some special or unusual effect is desired in the photography Such an instance occurred in preparing "The Swan," which followed the completion of "Kismet" at M-G-M. For this production an important night sequence was scheduled and it was decided to shoot it "day-for-night"—that is, photograph it in daylight, using filters over the lens to give the illusion of night. Sometimes such efforts can be very unconvincing, and t was for this reason that we decided to employ something new in the way of special filters and a new reflection material which we placed over windows of buildings and in the head lamps of a locomotive and several carriages

The sequence was scheduled to be shot on location some distance from the studio and for this reason our pre-production tests were staged on the back lot at M-G-M. Several new filters were tried in the tests, resulting in one being selected which studio technical heads have said produced the "finest 'day-for-night' scenes yet seen on the screen." Enhancing the realistic effect was the reflective material, previously mentioned. Used over the windows, etc., it had the effect of "burning through" the subdued effect created in the scene by the filters, giving a most realistic night-time illusion

In photographing pre-production tests, we always employ full camera crews and whatever grips, electricians, etc., are required On the makeup, wardrobe, hair dress and talent tests, we invariably em ploy two cameras—one set up for close-ups, the other for medium or long shots. Separate lighting is arranged for each camera, controlled hy separate switches, so that when we switch from one camera to the other, there is not the problem nor the delay of changing the lighting.

Pre-production test periods may run into weeks or even months, depending upon the problems encountered or the lavishness of the production. Also we have a problem today of so many of the top stars being employed in other studios

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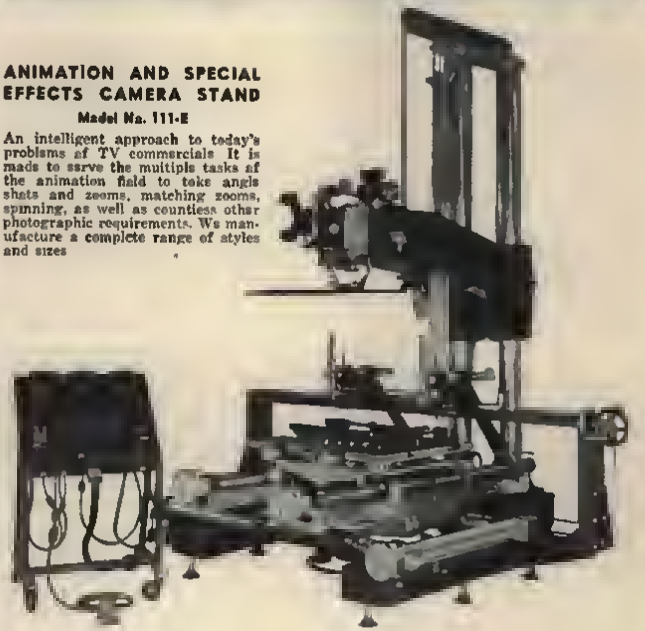

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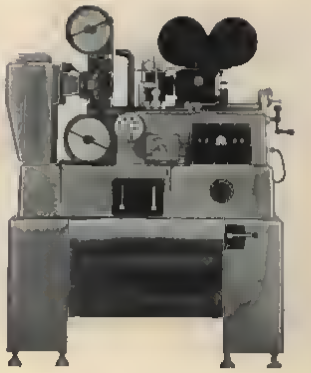

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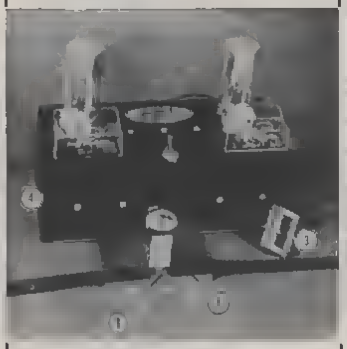

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or in television and we must wait the completion of their outside assignments in order to make the necessary tests for their coming commitments at M-G-M.

A given test shot may run any length, and depends upon the wishes of the director or perhaps the director of photography. Sometimes we may shoot as many as 60 tests on wardrobes alone, and these invariably require the use of both cameras in order to record for the screen the proper perspective. Very often a dress, gown or costume photographed closeup will look quite different when photographed "full figure" in a medium or long shot.

Needless to say, the time and money spent in pre-production tests actually saves considerable time and money later, once we start shooting the production proper. When testing has been adequately and carefully done—and evaluated—there are rarely any costly interruptions for changing makeup, hair styles and costumes after the first day's rushes are screened. All this has been settled once and for all, with the approval of all concerned. And only in very rare cases, and often after considerable deliberation, are any deviations made from the "norms" established by pre-production tests.

TOO AMBITIOUS FOR 8MM

(Continued from Page 36)

matic use of illumination, also a subject that could project powerfully as a silent vehicle without the intrusion of sub titles. Sal selected the universally known story of Christ's nativity. This was filmed in its entirety in our subbasement with sets and costumes that we designed and executed, and with a cast selected from among friends and family. Sincerity, dignity and simplicity with a strong accent on mood were the concepts upon which we based our effort. Make-up, costuming and illumination were the tools we employed. The film was set to simple Christmas music and was ready for showing during the holiday season. It was not until the following January that we discovered and joined a movie club and began seeing the work of other amateurs. Only then did we discover that we had attempted and achieved something unique and regarded as very difficult to bring off. Since then "The Nativity" has won honors in four international amateur film competitions.

Realizing that our goals were far too ambitious for 8mm, in the spring of 1953 we purchased a 16mm Bolex and had it equipped with a Pellegrini variable shutter. This was an essential accessory, for all our speical effects are created in the camera on the original. It was then that we selected for our second venture "The Fall of the House of Usher." The mood qualities and dramatic content of the story rendered it so irresistible to us that the enormous difficulties inherent in the vehicle from the amateur production standpoint became a challenge rather than a deterrent. Together we read and analyzed the story until we were in complete accord on its character and psychological implications, as well as upon the manner of interpretation. This method of working was followed throughout the entire scripting operation. Sal did the actual scripting, but it was the product of our unified thinking. He feels that the translation of this tale into a shooting script was the most monumental task of the entire endeavor.

When the script was complete I wrote the narrative, retaining much of Poe's language, and keying all additional narrative to his very individual style. The result was a unified narrative that carries the mood of the piece audibly while the film unfolds it visually. The narration is in the first person spoken by the friend; but the voice is that of Sal Pizzo. In this picture the speaking of the narrative becomes a dramatic performance.

Sal portrayed the difficult role of Usher. For the other roles we selected three friends from our movie club who had dramatic potentialities and the desired outward characteristics for their roles. Harry Ruffner had the physical attributes suitable to the strange and rather sinister butler. Rose Pellegrini, with her enormous dark eyes and long dark hair, was cast as Usher's tragic twin sister. Tulio Pellegrini had the physical appearance essential for a dramatic contrast with Usher, plus the expressiveness of countenance and quick intelligence which we knew to be essential for this sustained and exacting role. None of these people had had any dramatic experience. Under Sal's direction they turned in sincere and sensitive performances. The professional quality of the performances is due to the fact that people with good potentialities were directed to underplay their roles and to react rather than to act.

The principle settings were in our home. With borrowed pieces of antique furnishings and the use of drapery and home-made flats we transformed a modern living and dining room into interiors suitable to the period and character of our vehicle. Again our subbasement became a setting, this time for the dungeon burial chamber. The wide-angle lens, the dark draperies and the low-key lighting created the illusion of space which we did not have.

As I shall explain in my article next month, illumination was a paramount concern. The costumes were designed and executed by myself. Ingenuity he-

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comes the amateur costumer's substitute for money. We have all had much amusement out of Tullio's handsome cut away coat that was fashioned from a friend's ample maternity coat. The model of the Usher mansion was built by Sal from my designs. About 3 feet in height, it was set in its surrounding landscape in the sub-basement area previously occupied by the dungeon set. In our version of the story the Usher mansion is destroyed in the end by fire, and during the hectic burning sequence the Pizzo house very nearly went up in smoke with it.

After months of attentive listening, we came upon the Shostakovitch 5th Symphony which we edited and arranged on tape for our musical score. After the film was completely edited we had it sound striped. The music was wired from the tape recorder into the Bell & Howell "202" magnetic-recording projector, and narrative was spoken through a microphone.

Sal is the editor on our production team and finds this phase one of the most creative and satisfying of all the production activities. He has done much in the Westwood Movie Club to raise editing standards, to make the better filmers aware of matching action techniques, and to assist them in tight, concise editing of their films.

"The Fall of the House of Usher" is 28 minutes in length. The scripting was

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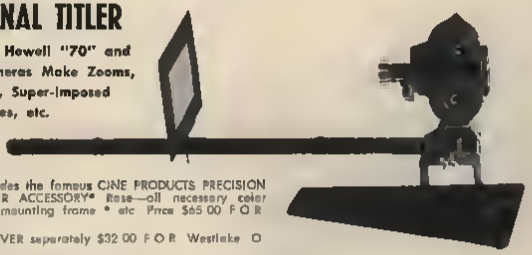

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begun in June of 1953. The film was completed with its sound track in July of 1954. Working in one's spare time with every detail of setting, costuming, etc., to be done by the producers before the camera can grind is a slow procedure. The longer sequences were filmed over week-ends, these sessions never breaking up before 3 or 4 o'clock in the morning.

In our first film, "The Nativity," we had an extremely sympathetic subject. When we chose "Usher" as our next vehicle, we were fully aware of the unsympathetic nature of our story. We did, however, through our own understanding of the central character, Usher, endeavore to portray him not as a melodramatic monster, but as a strange and haunted human being caught in the tragic web of heredity and environment. This interpretation does get through to the audience. Although the film was made with a more discerning group in mind, we have discovered in several large showings that it has enough ingredients at the various levels to grip and move any audience. Its reception has richly justified our belief in the principles of sound theater. People shudder at the mention of Poe, and certainly the larger segment of any audience would prefer not to be shown the morbid depths of life We have given them Poe and led them to share his dark and haunted world We have had, therefore, the wonderfully gratifying experience of putting something of ourselves into a work and seeing it come out powerfully in the finished product, the doubly rich experience of creating and of communicating.

AIDS TO 16MM CAMERAMAN

(Continued from Page 30)

sequence was a shot looking into a home lit with warm-colored light, while the foreground prop representing the side of a cabin or a contemporary home was lit with blue filtered lamps

Spotlights are preferred to floods for this work because the light may be controlled and masked off more precisely. It's even convenient to have the white light coming from spots, too, so it may be kept from washing out the color effects.

Occasionally useful is the device of "pinpointing" into the scene a few color highlights. Here the scene is lit with unfiltered lamps plus a few small spots with deep-colored gels over them. Glassware, white enameled items, and electronic assemblies are among the subjects benefitting from this treatment.

Cinerama, with its audience participation effect, has influenced more than the technical side of movie making Travelling shots appear in 16mm films rather frequently these days, taking viewers along for all kinds of rides Seldom does an airplane film omit flight scenes, unless it's strictly a technical job Railroad pictures present scenes taken from the locomotive of the track ahead, even if the paying passengers never get such a view.

Factory pictures are enlivened with shots taken with the camera traveling along assembly lines, while a mining film generally tempts the photographer into setting his camera on the front of a mine locomotive. Film sponsors realize that these shots are more than good entertainment—key information is often given by the narrator during such sequences. Facts that might ordinarily be difficult to fit in with other shots may be presented during the traveling sequence.

One industrial photographer showed real ingenuity in devising traveling shots for a lumber picture For the sawmill sequence, the Cine-Special was mounted on a giant log for a close vantage of the bandsaw at work. The photographer already owned a small wooden platform, about 12"x18", that he had previously made for such shots. On it was fastened a hi-hat camera mount, which takes a regular pan head from the tripod. Simply nailing the platform to the log, a proper distance from the sawblade, gave the desired view. For mounting the unit horizontally on walls, two 2x4's cut at a 45° angle at both ends for props are carried

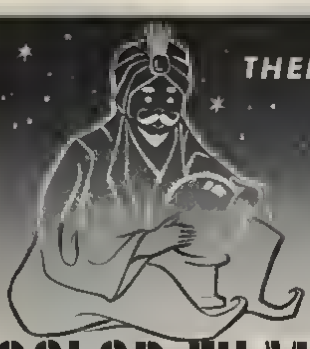
To protect the camera as the log was whipped back and forth near the blade, the log carriage operated at 1/3 normal speed and the camera turned over at only 8 frames per second.

Raw lumber in the form of boards leaves another part of the mill on a chain drive, and the cameraman there obtained permission to set a triangle and tripod on the moving line The resulting shot, along with on-the-scene sound effects, gave an excellent climax to an already impressive sequence

Automobiles offer many advantages for traveling shots. A photographer for a church film set his camera on the back of a station wagon for getting pictorial views as the car moved. A series of dissolves built an interesting moving sequence to allow the narrator to interrupt the dramatic action.

Forward views of moving scenery can be accomplished by mounting the camera platform securely on the fender or hood of a car. Lowering the tire pressure slightly will give a cushioned ride and result in a smoother picture.

Scenes taken through the windshield have been made easier with a device called the Autopod, selling for $57 50



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However, home-built rigs also do very well, and can be designed to use Quick-Set or other tripod heads. I have seen travel pictures taken through the windshield, where otherwise the subjects might have objected to being photographed. Mountain roads look especially good in this type of scene.

Two techniques that might be discussed together are limited animation and stills in movie filming. They aid in getting more results from each filming dollar spent—an important matter to 16mm producers.

"Limited animation" covers a variety of devices to escape the expensive process of drawing a new cell for each frame of the picture in normal animated work. Most of these methods originated with the big TV commercial film producing organizations, were then adopted by the smaller producers for local and regional clients. Having studied the possibilities, many companies lacking an animation artist are able to produce on order acceptable animated commercials and sequences for instructional films.

Animating a figure or object by moving a cutout of it over a background between each frame has served for countless pictures. On a national basis, the method is seen in wine commercials produced in San Francisco. Bottles of wine, trademarks, slogans, and cartoon vintners and customers whisk about the

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screen for 20 seconds or a minute.

For local clients, cost-cutting producers have adapted the same techniques with excellent results. Frequently the film maker is even spared the necessity of supplying art work. Advertising agency artists may draw the cartoon figures, letter the necessary slogans, and furnish background scenes. The cameraman discovers he's an animator after shifting the figures for his single-frame exposures. Very-low-budget assignments often dispense with the ad agency, and the filming group calls upon a freelance artist.

Another effective animation device is to use jointed cut-out figures. Care is needed to keep the action from looking amateurish. One national advertiser, a clock manufacturer, has a new series of commercials scheduled with "2½-dimensional" paper figures that may be moved. It is a good bet that similar films will appear for local sponsors.

Large and small producers alike make frequent use of pop-ups. Here, the camera is stopped and an item placed in the scene before it is started again. Any number of pop-ups may appear in a few seconds. No new device, the trick was seen in films made around the turn of the century.

Still photos play a part in economy TV commercial filming. If several good stills are on hand, a location trip can often be avoided. Movement is supplied by animating trade names and advertising slogans over the photos and by zooming the camera in and out. Good 20-second commercials for used car dealers, department stores, dry cleaners, and restaurants have been produced this way.

When the budget is limited, the resourceful and imaginative industrial or TV film cameraman familiar with the latest corner-cutting techniques can deliver a job that is the equal of any put out by the well-equipped studio.

PREPARING THE SCRIPT

(Continued from Page 34)

are serious faults that slow a film down and defeat its purpose.

Most audiences expect ideas to be presented with variety and force. It is not enough, therefore, merely to place the facts upon the screen. The approach must stimulate imagination with a variety of treatment, and at the same time forcefully present the subject matter.

Audiences have a natural curiosity regarding the locale and the characters portrayed in a film. A well-written script, therefore, will satisfy this curiosity by clearly establishing the locale as well as presenting enough detail to clearly identify each character and make clear his relationship to the story.

Many film-makers, in plotting a script for filming, feel that a script must be full of odd and unique situations. Actually, it is highly improbable that any film situation today is entirely original. An audience will be more impressed with the freshness of the approach used in presenting a situation.

A good script doesn't "just grow." Rather, it evolves through a series of steps from the original idea to the actual diagram for production which we call the *shooting script*. Perhaps in the simplest form of film making—the home movie—all the steps of production and of script writing are not necessary. But in every other type of picture, whether it be a documentary or a feature, a much better script will follow a definite plan of preparation.

Let us assume that our idea for a film has been established. The next step is to sketch briefly the outline of the story that is to be built around the idea. This is called the *synopsis*, and it may take the form of either a plot outline or a short prose summary of the story. The important thing to remember about the synopsis is that it treats only the basic plot of the film; it does not deal with the cinematic approach or any of the production technicalities. The synopsis is the stage at which the story is organized, or revised until it is correct in terms of what the producer wishes his picture to convey.

After the synopsis is approved and the story values have been established, the script writer can then take the story and set it down in the broader, more detailed form that we call the *treatment*. This is a more or less full exposition of the story, written in narrative form and including essential action and dialogue (in content, if not in final form). In addition, the treatment gives general suggestions as to the cinematic approach to be used in interpreting the various parts of the story. It suggests the scope of the film, the amount of production value involved, and various technical devices that will aid in putting the story across on the screen.

When the treatment is completed, it should be studied by all the technicians who will be involved in producing the film, and who can then get together in story conferences to discuss the film, make any necessary decisions, and decide whether the picture as presented in the treatment can be shot with the facilities available.

Once approved, the treatment is then broken down, refined, and re-written in *scenario* form. (The scenario is also often called the screenplay, continuity, or shooting script.) The scenario is a

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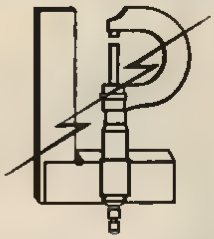

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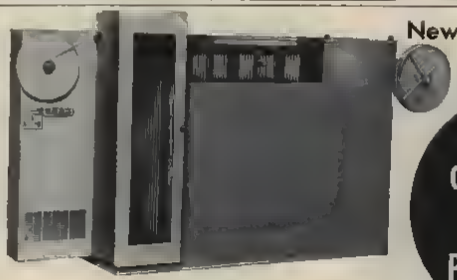
highly detailed description in technical language of the story scheduled for production. It is an elaborated breakdown of the treatment into actual scenes and sequences, with the action and dialogue clearly stated or defined. It supplies a good deal of information for the production technicians with regard to camera set-ups, locale of scenes, costumes, set decorations, lighting, etc. Moreover, the scenario points up the action, elaborates on the characters, includes little bits of "business," and suggests variations in pace and tempo. In short the scenario is the detailed blueprint of the film to be shot.

One of the most important factors in any scenario is continuity. This is the inter-relation of separate scenes and sequences, blending them together to form a unified cinematic pattern. If a screen story "bangs together" well and proceeds smoothly from one phase to another without abrupt breaks in connection or meaning, we say that it has smooth continuity.

In simpler form, the term means that a good script has a beginning, a middle and an end—each a separate phase of the story but leading logically into the other with a strong sense of connection binding them together. This result can only be achieved by careful pre-planning. The dramatic or story elements



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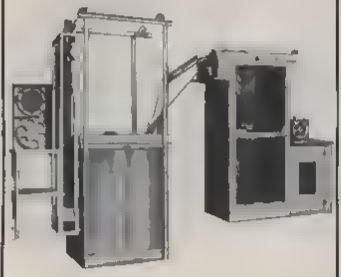

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involved should be organized in a logical pattern so that they tie smoothly together. The script is the place where continuity should originate. Contrary to the belief of some, it cannot be manufactured in the cutting room.

This discussion will be continued next month at which time format of the script will be explained as well as the elements of dramatic construction, the planning of individual scenes and the use of transition devices.

FILMING THE JET CARRIER

(Continued from Page 32)

for those startling shots in "This Is Cinerama," our initial production

Lowell Thomas and General Merian C. Cooper had produced that show, and Louis de Rochemont was going to do the second. I was signed to photograph the America scenes. The one I'd like to talk about is the jet plane sequence. For the climax of the film we were to take the audiences in for a landing on a jet carrier.

The Navy let us use the aircraft carrier U.S.S. Lake Champlaine, and we worked off the Florida coast near Jacksonville. Working with me as operative cameraman for the shipboard footage was Jack Priestley. We didn't have any real trouble until the weather turned bad. One thing was keeping the camera going; the other was keeping the jets from flying off for nice weather and leaving us behind.

We shot on the elevator for planes and escalator for pilots and in the briefing room. On deck, we built a platform right off the side of the carrier, with just six inches on the ship itself. We didn't blimp the camera because it would have tipped us over just that much more. The jets over our heads didn't bother us as much as the strong head winds.

For another scene, we wanted to get a view of what it was like as the plane came right at the carrier deck, so we slung the camera on a platform right below the overhanging edge of the rear deck. There wasn't room for anybody to be with the camera in that shot. So we used a device called Regohm for remote control operation of the camera.

For some panoramas of the carrier, I had the camera mounted in the side door of a rescue helicopter. They gave me one of those crash helmets and I wore my old plaid windbreaker. And there I was in Florida. I had a problem with those young Navy "eggbeater" pilots. With Cinerama you've got to make sure you keep your horizon level or you twist the picture out of shape. But I finally got my shot.

We saved the big jet landing for last. We didn't want to lose the camera till we had shot the rest of the show. The boys in the crew affectionately call it "the monster." They say it's worth around $25,000.

Now about the Regohm. No camera man can squeeze into the nose of a jet. Dick Babish helped work out an arrangement with the Electric Regulator Corporation and Grumman Aircraft to mount the camera in the nose of a Navy Banshee F2H3 Jet. Tests were made in Patuxent, Maryland, with a dummy carrier deck. Then the whole nose equipped with the specially-controlled camera was shipped to Florida and installed on the Banshee.

We spent a couple of weeks more testing the equipment. But when Lt. Comdr. Bud Gear got into the cockpit, it was every man—Gear and the "monster"—for himself.

We just couldn't get the automatic mechanism to work right. Came one Saturday morning and we had exhausted our alloted fuel. We were grounded and we didn't have our shots yet. Comm. Gear was supposed to report back to Maryland. In the afternoon I tried one more series of adjustments. Everyone had broke for the weekend. I got gas for one more trial. It worked.

My job now was to keep Bud Gear around. I billeted him in my hotel for a go on Sunday. It rained all day. I put him up again at my expense on Sunday night. It was a gray Monday morning.

The weather had started to set in on us. Cold fog banks closed in the coast for a hundred miles. We were told that it was probably today or never. It was the climax of "Cinerama Holiday" and the climax of the filming in America.

Visibility was decreasing by the second and we had lost the "Banshee" in the overcast. At least I had. And they told me Comdr. Gear was running low on fuel. But then we saw it coming down towards us. It was a mighty funny sight. In place of the blue nose it usually has, there was this big black box, with the 200-pound camera inside looking out.

It probably wasn't much to those guys who have been bringing in planes in all kinds of weather, but they probably didn't know that this was the first time any sort of camera was being punished by such speed or had been asked to shoot a scene moving at such tremendous speed. Our trouble was caused by the great pressure in the front of the nose binding the shutter. We kept blowing fuses.

Back to the plane. Only one landing gear clicked down. But Gear had to pick up his nose and circle for another pass. I could see us fishing the camera out of the sea. But both wheels came down this

time. We didn't know whether the camera would go shooting out of its mount. The Banshee was stopping dead from 125 knots. And before I knew it, the tail hook had caught one of the cables.

A couple of weeks later I was sitting in a theatre right in Bud Gear's seat, making that landing myself. Soon after that I was off again with Mantz and the boys to start filming the next Cinerama production, "Seven Wonders of the World" for Lowell Thomas. I think it's going to be the greatest show that has ever been filmed, and I'm going to tell you more about it in a few months.

FILMING THE SKI BALLET

(Continued from Page 33)

The beginning of the ski ballet was planned for a Saturday, and the day before we set about to mount our camera on skis. First we welded together two large sleds as a base. The major problem was finding a way to mount the 200-pound camera so that it would simulate the effect of a skier's actual body movements and shifts of equilibrium.

This was taken care of by erecting a frame of steel bars as support and protection for the camera. The camera was suspended from a rod from the top-center of the rig. The important thing was not to mount it rigidly, but let its weight shift as the human body shifts on the ski slope.

On Saturday morning we started off with the most spectacular shot that was planned. Ten skiers went down the slope ahead of the camera. Gayne Rescher was seated behind the camera, watching over it on sharp swings and turns. Two top-notch skiers guided the rig down the slope. Over forty skiers were then to pass the camera, disappearing in a swirl of snow. At first we had trouble merely getting the monster to move, and we had to turn the sled over and wax the bottom. Now, it gradually began picking up speed. The skiers behind us could not catch up. Soon we passed the skiers who had started out ahead of us, and on we went, the men guiding the sled hanging on for dear life. Finally we hit a patch of soft snow, and stop

(Continued on Page 55)

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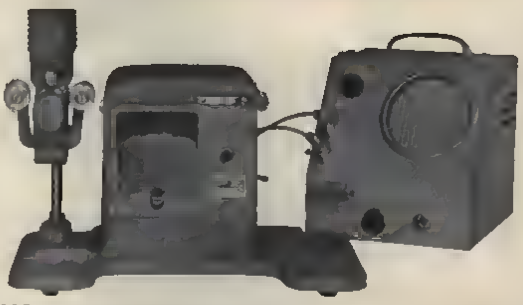

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ALLIED ARTISTS

● ELLSWORTH FREDERICKS "The Friendly Persuasion," (Color, wide-screen) with Gary Cooper, Dorothy McGuire William Wyler, producer-director

● WILFRID CLINE, "Mother-Sir!" with Joan Bennett, Gary Merrill and Shirley Yamaguchi Edward Bernds, director

● HARRY NEUMANN, "Crashing Las Vegas," with Leo Gorcey, Huntz Hall, Mary Castle Jean Yarborough, director

● CHARLES VAN ENGER, "Magnificent Roughnecks," with Jack Carson, Mickey Rooney, Nancy Gates, Jeff Donnell Sherman Rose, director

COLUMBIA

● CHARLES LANG, "Solid Gold Cadillac," with Judy Holliday, Paul Douglas, Fred Clark Richard Quine, director.

● BURNETT GUFFEY, "The Harder They Fall," with Humphrey Bogart, Rod Steiger, Carlos Montalban Mary Robson, director.

● CHARLES LAWTON, "It Happened One Night," with June Allyson, Jack Lemmon, Charles Bickford. Dick Powell, producer-director.

● HENRY FREULICH, "He died Laughing," with Frankie Laine, Lucy Marlow. Blake Edwards, director

METRO-GOLDWYN-MAYER

● RUSSELL HARLAN, "Lust For Life," (Ansco Color, CinemaScope) with Kirk Douglas, Anthony Quinn Vincente Minelli, director.

● ROBERT SURTEES, "The Swan" (Eastman Color, CinemaScope) with Grace Kelly and Alec Guiness Charles Vidor, director

● PAUL VOGEL, "The Rack," with Paul Newman, Walter Pidgeon, Wendell Corey Arnold Laven, director

● JOHN ALTON, "The Catered Affair," with Bette Davis, Ernest Borgnine, Debbie Reynolds. Richard Brooks, director

PARAMOUNT

● LOYAL GRIGGS, WALLACE KELLEY, PEVERELL MARLEY, "The Ten Commandments," (Technicolor; VistaVision) with Charlton Heston, Anne Baxter, Yul Brynner, Edward G Robinson and others. Cecil B DeMille, producer-director.

● DANIEL FAPP, "Pardners," (Technicolor, VistaVision) with Dean Martin, Jerry Lewis, Lori Nelson Norman Taurog, director

REPUBLIC

● ERNEST HALLER, "Dakota Incident," (Trucolor) with Linda Darnell, Dale Robertson, John Lund, Ward Bond Lew Foster, director

20TH CENTURY-FOX

● LEON SHAMROY, "The King and I," (Color, CinemaScope) with Deborah Kerr, Yul Brynner, Rita Moreno Walter Lang, director

● LEO TOVER, "The Revolt of Mamie Stover," (Color; CinemaScope) with Jane Russell, Richard Egan, Agnes Moorhead, Joan Leslie. Raoul Walsh, director

● MILTON KRASNER, "23 Paces to Baker Street," (Color, CinemaScope) with Van Johnson and Vera Miles Henry Hathaway, director

● LEE GARMES, "The Sixth of June," with Richard Todd, Edmond O'Brien, Dana Wynter, Robert Taylor. Henry Koster, director

UNIVERSAL-INTERNATIONAL

● GEORGE ROBINSON, "Toy Tiger," (Technicolor) with Jeff Chandler, Larraine Day, Cecil Kellaway Jerry Hopper, director.

● HAROLD LIPSTEIN, "Apache Agent," (Technicolor· CinemaScope) with Audie Murphy, Anne Bancroft, Pat Crowley Jesse Hibbs, director.

● RUSSELL METTY, "Written on the Wind," (Technicolor) with Rock Hudson, Lauren Bacall, Robert Stack Douglas Sirk, director

● IRVING GLASSBERG, "Johnny Salvo," with Ray Daoton, Leigh Snowden, Grant Williams. Jack Arnold, Director

● WILLIAM DANIELS, "The Gentle Web," (Technicolor) with Esther Williams, George Nader, Edward Andrews. Harry Keller, director

WARNER BROTHERS

● ROBERT BURNS, TOM TUTWILER, "The Spirit of St. Louis," with James Stewart Billy Wilder, director.

● PEVERELL MARLEY, "Serenade," (Warnercolor) with Mario Lanza, Joan Fontaine, Sarita Montiel Anthony Mann, director.

● JOHN SEITZ, "Santiago," (Warnercolor, wide-screen) with Alan Ladd, Rossana Podesta, Lloyd Nolan Gordon Douglas, director

● BORIS KAUFMAN, "Baby Doll," (Wide-screen) with Karl Malden, Carroll Baker, Eli Wallach Elia Kazan, producer director

● CARL GUTHRIE,"Cheyenne" (TV) with Clint Walker, L. Q. Jones. Richard Bare, director.

● CARL GUTHRIE, "Kings Row" (TV) with Jack Kelly, Robert Horton, Nan Leslie, Victor Jory. Paul Stewart, director

● HAROLD STINE, "Casablanca," (TV) with Chas McGraw, Marcel Dalio John Peyser, director

● CARL GUTHRIE, "Siege," (TV) with Elizabeth Montgomery and Ed Kemmer Paul Stewart, director

INDEPENDENT AND TV FILMS

● CHARLES BOYLE, "The Great Locomotive Chase," (Disney. Technicolor, CinemaScope) with Fess Parker, Jeff Hunter. Francis D. Lyon, director

● WILLIAM MELLOR, "Johnny Concho," (Kent Prod.) with Frank Sinatra, Phyllis Kirk, Keenan Wynn. Don McGuire, director

● JOSEPH LA SHELLE, "Run For The Sun," (Russ-Field Corp.) (Superscope) with Richard Widmark, Trevor Howard, Jane Greer Ray Boulting, director

● ERNEST LASZLO, "Bandido," (Prods.; Color.; CinemaScope) with Robert Mitchum, Ursula Theiss, Gilbert Roland Richard Fleischer, director

● WALTER STRENGE, "Hit and Run," (Hugo Haas Prod.) with Cleo Moore, Hugo Haas. Hugo Haas, producer director

● FLOYD CROSBY, "TV Reader Digest," (Alpha TV)

● ALLAN STENSVOLD, "Dr Hudson's Secret Journal," (Author Playhouse)

● KARL FREUND, "I Love Lucy," "December Bride," "Our Miss Brooks," (Desilu Prods.)

● NICK MUSURACA, "The Lineup," (Desilu)

● SID HICKOX, "My Favorite Husband," (Desilu).

● WILLIAM WHITLEY, "Crossroads," (Federal TV)

● VIRGIL MILLER, "You Bet Your Life," (Filmcraft Prods.)

● JOE NOVAK, "Brave Eagle," (Frontier Prods.)

● LESTER WHITE, "Navy Log," (Gallu Prods.)

● DANIEL B CLARK, "People Are Funny," "Do You Trust Your Wife?" (Don Fedderson Prod.)

● MACK STENGLER, "Liberace," (Guild Films).

● Robert De Grasse, "It's Always Jan," (Jannord Prod.), and "Make Room for Daddy," (Morterte-Desilu).

● Norbert Brodine, "The Loretta Young Show," (Lewislor Films).

● Stuart Thompson, "Lassie," (Robert Maxwell).

● Philip Tannura, "Burns & Allen Show," (McCadden Prods.)

● Harry Wild, "Bob Cummings Show," (Laurmas-McCadden).

● James VanTrees, "The People's Choice," (Nordee Prods.)

● William A Sickner, "Medic," (Medic TV Prods.).

● George Clemens, "Schlitz Playhouse of Stars," (Meridian Prods.)

● Harold Marzobati, "MGM Parade," (M-G-M Studio)

● Henry Sharp, "Sheena, Queen of the Jungle," (Nassour Studios)

● Jack MacKenzie, "Frontier," (Outpost Prods.)

● Lucien Andriot, "It's A Great Life," (Roydic Corp.) and "The Life of Riley," (Hal Roach)

● Lothrop Worth, "The Great Gildersleeve," (Hal Roach)

● Gilbert Warrenton, "Sergeant Preston of the Yukon," (Chas. E Skinner Prods.)

● Charles Van Enger, "Big Town," (Mark Stevens TV)

● Harold Wellman, "Wyatt Earp," (616-Desilu).

● Karl Struss, "My Friend Flicka," (TCF TV Prods.).

● Kenneth Peaco, "Fury," (TV Programs of Amer.)

● Guy Roe, "Ganghusters," (Visual Drama, Inc.)

FILMING THE SKI BALLET

(Continued from Page 53)

we did, spraying all bodies in different directions. Gayne was thrown clear in the soft snow, the skiers likewise, and the rig bounced several times over. When Gayne reached the camera it was stuffed with snow.

When all the skiers had caught up, we dragged it back up the slope and welded on the biggest, strongest, toughest brake we could find. It was a detail we had forgotten That was only the start.

Only three members of the Cinerama crew knew how to ski, Gayne, Louis de Rochemont's son, Louis III, and Bob Bendick The rest were mobilized on a strange assortment of velos, unique cycle-like devices mounted on short skis fore and aft, and on skis and snowshoes. There was no difficulty when it came to the photography, but rather when it came for the crew to follow the camera down the slope after the scene had been photographed What followed in short order was a succession of injuries that practically caused Mr. de Rochemont to abandon the sequence on the third day out.

After the initial set-up, Louis de Rochemont III, who was skiing with the camera sled, waited until the location had been cleared, then started downhill at top speed. He, too, hit soft snow, unpacked by the trail skis Grip Mike Mahoney spotted the spill and in short order had a rescue sled on the scene. Louis was in a cast for the rest of the picture.

Joe was the next victim. He was skimming down a hillside on a velo, which is much more dangerous than putting on skis for the first time, and was thrown off. He suffered some minor cracked ribs and was laced into a corset-type contraption by a Parsenn doctor. This was the time of discouragement, and shooting was continued on condition that the crewmen ride only on the equipment sleds or stand on snow shoes. But one crew member let his hoot laces tangle under the sled and received a badly twisted knee

All the hardships, however, scarcely dampened our spirit. We all realized we were doing something wonderful and unique. All the hardship and danger was not completely lost on our future audience Though in one scene skiers were to come at the camera through clouds of mist that had materialized on a locale. Max Bertsch's sister, Margarete, enacted her part with such spirit, trying to raise a cloud of snow before the three-lensed camera, that she struck the camera sled and was thrown on her hip. This shot can be seen in "Cinerama Holiday."

We have been asked how the camera operated in such cold and at such high altitude. Actually, in all our experience with Cinerama it never operated better. Perhaps that is because we took so many extra percautions. Ordinarily we use a regular 30-volt set-up. Instead, we took three 12-volt truck batteries, and removed two volts from each. They were what made the sled so heavy, giving us such outstanding speed. We never undercranked, even for the bobsled ride We didn't even have trouble with the film snapping in the cold; and remember, we had three times the worries, with three magazines feeding simultaneously.

Photographing the bobsled run is another story in itself. Before we would undertake filming the run, we sent back to the States for the old Number One camera that was used to film "This Is Cinerama." We couldn't afford to lose our new camera because we were expected to go on from Switzerland to capture scenes of Paris in the spring-time.

(Continued on Page 58)

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INDUSTRY NEWS

Technicolor Motion Picture Corporation has announced that due to increased labor costs, it is increasing its prices for 16mm and 35mm dye transfer release prints ¼c per foot.

Simultaneously, the company announced a reduction in the price of 35mm dye transfer answer prints from 97c to 65c per foot. Price changes apply to all products furnished from the Hollywood plant of Technicolor.

Dr Herbert T. Kalmus, president of the company, also has announced a general policy of not requiring advance payments for release print orders placed on or after March 1, 1956 for manufacture at the Hollywood plant.

• • •

The most important milestone in the 19 year history of Camera Equipment Company, New York, is scheduled to take place early next month when the company's component branches will be consolidated under one roof at 315 West 43rd Street, New York.

The event marks a unique record of success. Starting at 1600 Broadway, present headquarters, the organization consisted of Frank C. Zucker, Margaret Zucker, Eugene H. Levy, and Charles Theurer who is now superintendent of the repair department and machine shops.

Advent of World War II brought rapid increase in the company's business and additional space was taken on the third floor at 1600 Broadway. Little by little the company acquired additional space in neighborhood buildings —at 253 West 64th St., 304 West 54th St., etc.

The consolidation of all operations at 315 West 43rd St. in the heart of Manhattan's famed "film district," will bring about a more cohesive and efficient operation. Entrance will be on the ground floor, eliminating the delay and dependence of elevator service.

• • •

Development of a revolutionary new dubbing cue prompter that materially reduces recording time by eliminating mis cues is announced by Telefilm, Inc., Hollywood. Company reports prompter not only efficiently cues all channels needed in a recording session, but it can also be used as a voice cue track for animated scenes or any other recording where workprint for screening is not available.

The prompter employs a regular projection footage counter in a new application that not only provides for the narrator but cues all sound channels for dissolves, fades, and level settings. It has a projector drive mechanism that maintains absolute sync, both forward and reverse, with the dubbing system through a Selsyn interlock.

In operation, the Prompter uses a 25 foot cue strip that can be marked prior to the recording session. The markings are removable, which not only provides for last-minute corrections but allows the strip to be cleaned and reused. During the dubbing session, the marks are projected onto a highly illuminated screen located next to the workprint screen. Lateral divisions provide for all sound channels and the width of the screen permits ample warning of the cue marks coming up to the reference mark.

The system was conceived and developed by Don Harrold, chief sound engineer of Telefilm, according to Joseph A. Thomas, president.

• • •

High-speed movies are finding increasing applications in science and industry, according to George T. Eaton of Kodak Research Laboratories. Some of its uses are measurement of mechanical and electrical effects, determination of velocities, study of welding arcs, and analysis of fundamental chemical processes. They are also proving useful in study of combustion processes and explosive reactions including guided missile, rocket, and atomic bomb research.

According to Eaton, camera units having film wrapped on a revolving drum, or based on a rotating mirror principle, utilize high intensity, short duration exposure to reach "almost fantastic" recording speeds. Other cameras, having conventional film sprocket drive, are capable of speeds up to about 10,000 frames per second.

One superfast camera, the Hycon Submicrosecond, has an exposure time of one ten-millionth of one second. It is used to study particle motion in blast furnaces and jet engine combustion.

Data recording includes numerous uses of both conventional and special camera equipment to obtain photographs for records of construction progress, experimental apparatus, equipment development, and time and motion studies.

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(Continued on Next Page)

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(Continued from Preceding Page)

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FILMING THE SKI BALLET

(Continued from Page 55)

The tremendous vibration of the racing bobsled caused the film to buckle over half-a-dozen times, but finally a St Moritz greengrocer named Nino Bibbia caught the Cresta run whole for us.

Gayne was probably the only person who came out the "winter wonderland" without a scratch, although he was probably most vulnerable of all, seated on the camera sled. He attributes his good fortune to the fact that he never permitted himself to be tied to the sled, allowing himself to be gracefully tossed clear into the snow. This part of Cinerama's adventures in Switzerland can best be characterized by the comment of a busy Davos bone-setter, "What are you people doing, making a film or having a war?" And it is said that the insurance company cancelled our policy.

But the satisfaction we enjoyed at the end of the Swiss shooting, and again in the Cinerama theatre, was worth it all.

CURRENT COLOR TECHNIQUES

(Continued from Page 27)

After printing, the matrix is developed and etched to produce a colorless gelatin relief image — the positive of the negative from which is was printed. A matrix is prepared for each color aspect of the scene.

While the matrices are being made, a special dye receptive blank film is prepared. If the customer wants prints with optical sound tracks, the silver sound record is incorporated in the blank film at this stage; if the customer's prints are to carry magnetic sound tracks, the silver sound record is omitted and the magnetic tracks are applied after the dye transfer.

The matrix film carrying the blue aspect of the scene passes through a yellow dye solution. It absorbs the yellow dye, and is then brought into contact with the blank film on a dye transfer machine.

While the two films are traveling in contact, the yellow dye from the matrix is transferred to the blank film. At the end of the dye transfer machine the first matrix is removed.

The blank is now brought into contact with the second matrix, which corresponds to the red light in the scene. The second matrix has been traveling through a cyan (blue-green) dye solution, and the dye is transferred to the blank which is carrying the yellow image.

After the blank has imbibed cyan and the second matrix has been removed, it is brought into contact with the third matrix, which corresponds to the green light in the scene and has been immersed in magenta dye. Finally, the third matrix and blank are separated.

The blank film is no longer blank; it now has all the colors necessary for excellent reproduction of a color scene and is ready for delivery to exhibitors for projection. Where yellow dye is present, blue light is subtracted from the projector's white light source; similarly red is subtracted where cyan is present and green where magenta occurs. Absence of all dyes results in white light on the screen and presence of all dyes in sufficient quantities creates an absence of light, or black on the screen.

Wet matrix and blank emulsions have a consistency approximating wet chewing gum, but all dyes have been transferred in super-imposed registration within tolerances of ten-thousandths of an inch.

Only Technicolor offers the producer the alternative of having film printed on color positive stock or by the dye transfer method. Dye transfer release prints offer a cost advantage when a large number of prints are required for world-wide release. And by dye transfer printing from matrices valuable negative is saved from constant re-use.

Color positive release prints are manufactured only from color negative. Color positive stock is similar to color negative in that it has three super-imposed emulsion layers. Color positive stock is contact-printed by light coming through the color negative. Color negative has different colors correlated to the sensitivities of color positive emulsion layers.

Color positive stock records one color image aspect in each of its three emulsion layers and, after printing, is developed.

When optical sound tracks are required for color positive release prints, the picture images are printed first. The sound track image is then printed and developed. Development of the picture image is the last step.

When magnetic sound tracks are required, they are placed on the release prints after printing and developing.

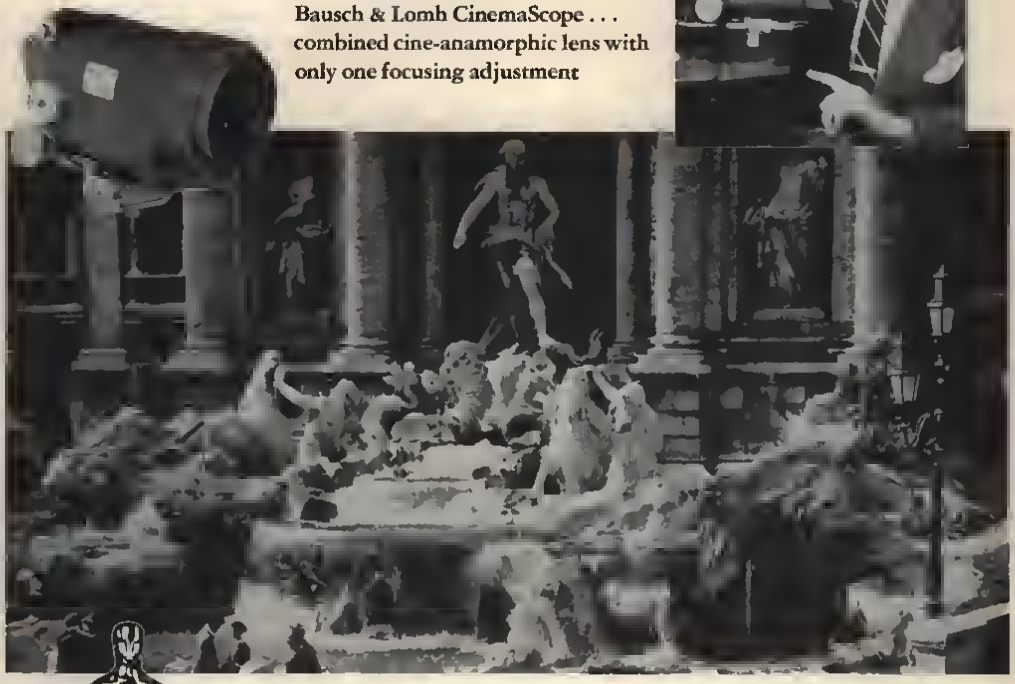
From squeezed (anamorphosed) or large area negatives, Technicolor manufactures Cinerama, CinemaScope, VistaVision and SuperScope color release prints.

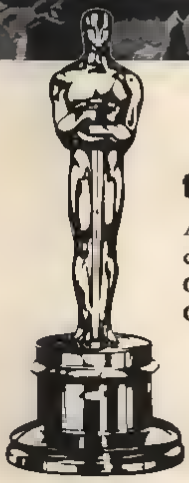
The original version of the above article appeared in *Technicolor News & Views*, the house publication of Technicolor Motion Picture Corporation. The article has been modified in several respects with the approval of Technicolor.—*Ed.*

Milton Krasner, ASC

the lens

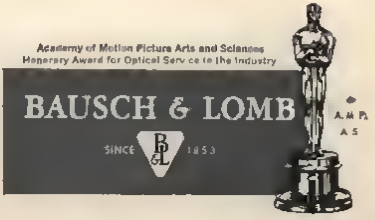
Bausch & Lomb CinemaScope . . . combined cine-anamorphic lens with only one focusing adjustment

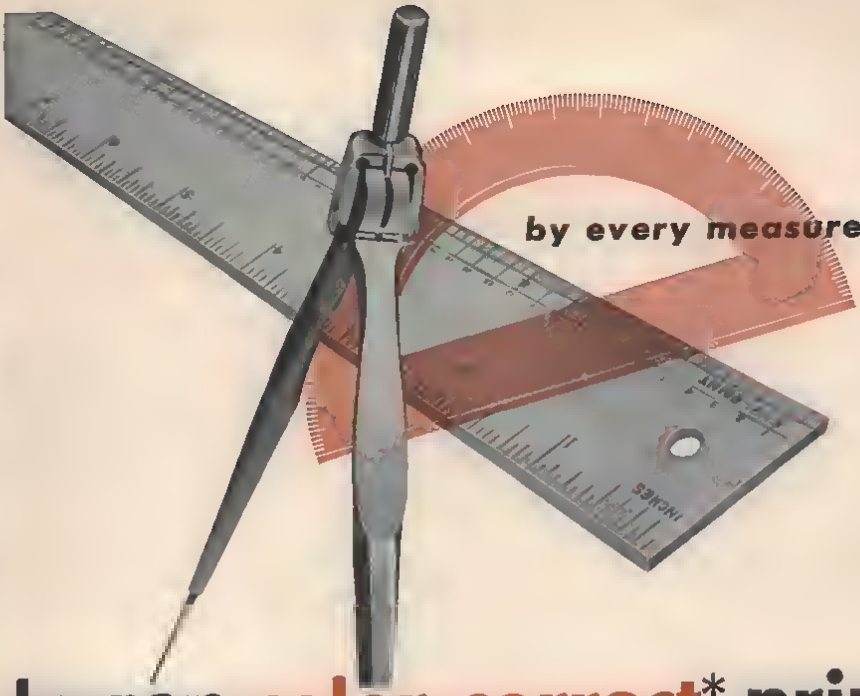




the result

Academy Award, 1954, for color cinematography in the 20th Century-Fox production, "Three Coins in a Fountain"





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